SYMPTOMATIC REMISSION IN SCHIZOPHRENIA AND ITS RELATIONSHIP WITH FUNCTIONAL OUTCOME MEASURES IN INDIAN POPULATION

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CERTIFICATE

This is to certify that the dissertation titled, **"Symptomatic remission in Schizophrenia and its relationship with functional outcome measures in Indian Population"**, submitted by **Dr. SELVARAJ. M,** in partial fulfillment for the award of the **MD degree in Psychiatry** by the Tamil Nadu Dr. M. G. R. Medical University, Chennai, is a bonafide record of the work done by him in the Institute of Mental Health, Madras Medical College during the academic years 2010 – 2013.

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DECLARATION

I, **Dr. M. Selvaraj,** solemnly declare that the dissertation titled, **"SYMPTOMATIC REMISSION IN SCHIZOPHRENIA AND ITS RELATIONSHIP WITH FUNCTIONAL OUTCOME MEASURES IN INDIAN POPULATION"** has been prepared by me, under the guidance and supervision of **Dr. R. JEYAPRAKASH** M.D., D.P.M., Professor of Psychiatry, Madras Medical College. I also declare that this bonafide work or a part of this work was not submitted by me or any other for any award, degree, diploma to any other University board either in India or abroad. This is submitted to The Tamilnadu Dr. M. G. R. Medical University, Chennai in partial fulfillment of the rules and regulation for the award of M.D degree **Branch – XVIII (Psychiatry)** to be held in April 2013.

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Abbreviations		
1	BPRS	Brief Psychiatric Rating Scale
2	CGI-I	Clinical Global Impression-Improvement
3	CGI-S	Clinical Global Impression-Severity
4	COWAT	Controlled Oral Word Association Test
5	DSM	Diagnostic ans Statistical Manual
6	GAF	Global Assessment of Functioning
7	ICD	International Classification of Diseases
8	LTPR	Long Term Percent Retention
9	MINI PLUS	Mini International Neuropdychiatric Interview
10	PANSS	Positive And Negative Syndrome Scale
11	PSP	Personal and Social Performance
12	RAVLT	Rey Auditory Verbal Learning Test
13	RSWG	Remission in Schizophrenia Working Group
14	SANS	Scale for the Assessment of Negative Symptoms
15	SAPS	Scale for the Assessment of Positive Symptoms
16	TMT	Trail Making Test
17	WHO QOL	World Health Organization Quality Of Life

CONTENTS

INTRODUCTION

Historically schizophrenia was conceptualized as a disorder with poor prognosis and outcome. The older term “Dementia Praecox” itself carried negative connotation that this disorder would be a chronic, progressive and debilitating disorder. Over the years, extensive research on course and outcome of schizophrenia in Western population found a variable outcome

In the year 2002, The Science journal published that once the symptoms of schizophrenia occur, they remain for life and they produce maximum disability [(1)]. Obviously there is evidence that a certain percentage of schizophrenia patients have poor outcome. It is logical to apply criteria of deficit syndrome to this population. The remaining population has either good or in between good and poor outcome. This remitted group needs clinical criteria which could be achieved by treating clinician or at least can work towards them [(1)].

In the year 2005, the Remission in Schizophrenia Working Group (RSWG) put forth definition for symptomatic remission and set specific operational criteria for its assessment. They also said that the validity of this criterion in relation to outcome measures of schizophrenia need to be studied in future [(2)].

Since the publication of the remission criteria in March 2005, more than 50 articles on this topic have been published. Reviewing these articles brings about various problems [3]:

- Many of the studies have used the symptom-severity remission criteria omitting the time criterion.
- Some studies have used other outcome measures than the proposed PANSS, SANS/SAPS, or BPRS scales (e.g., CGI-S).
- Some studies using the BPRS have not assessed the two missing negative symptoms of the severity criteria.
- There is a huge variation with respect to duration of study period.
- Some studies suffered from high dropout rates, if reported at all.
- Finally, there is a huge variation regarding sample selection (e.g., acute inpatients vs. stable outpatients, first episode vs. multiple episode patients, schizophrenia vs. schizophrenia spectrum disorders, first-episode schizophrenia vs. first-episode psychosis including affective psychosis, patients with co morbid substance use disorder in or excluded, major differences in symptom severity at baseline, etc)[3].

However most of studies done in western population found the criteria for symptomatic remission can be attained and sustained. Better symptomatic

status is also found to correlate with better functional outcome, better quality of life and cognitive functioning [(3)].

Compared to western population, it was found that non-white non-Europeans have more benign course and more favorable outcome. Studies from Hong Kong, India and Srilanka showed favorable results. WHO sponsored studies also showed better outcome in developing countries. But studies comparing symptomatic remission with functional outcome in Indian population is lacking.

Remitted patients still showed areas with an inadequate level of functioning. Functional deficits were most often seen in social relations (40%), work (29%) and daily life activities (17%). Best functioning was assessed for self-care, self-control, health management and medical treatment. A moderate to severe level of disorganization and emotional distress was observed in 38% and impaired subjective well-being in 29% of patients defined as being in symptomatic remission[(4)].

With this Background, this study tries to assess functional outcome in symptomatic remitted schizophrenia patients compared to unremitted patients in Indian population.

REVIEW OF LITERATURE

Schizophrenia is arguably the most puzzling of psychiatric syndromes and one of its most debilitating. It is characterized by disordered cognition, including a "gain of –function" in psychotic symptoms and a "loss of –function" in specific cognitive functions, such as working and declarative memory, but without the progressive dementia that characterizes classical neurodegenerative disorders. Although its phenomenology is fascinating, its pathophysiology and etiology remain unclear, and people with the illness suffer greatly.

The epidemiology of schizophrenia around the world has been examined and defined, along with its distinctive disease characteristics such as the unusual age of onset and its lifelong symptom course. Clinical genetics, postmortem tissue neurochemistry, and brain imaging characteristics (structural, functional, and molecular) have advanced, if not yet defined, the illness pathophysiology. Cognition in schizophrenia has been reconceptualized as a feature that is critically important to outcome and to a full disease understanding.

Current treatments have come further than early scientists would have thought: Pharmacology, based on initial serendipitous observations, has been taken to a sophisticated level of application, while psychosocial approaches are demonstrating clear efficacy. The involvement of

individuals with the illness in the process of recovery has been gratifying to observe.

Although there are pharmacological agents to treat psychosis and cognitive remediation strategies to improve psychosocial function, physicians cannot claim to have the armamentarium of treatments to fully restore health to individuals with schizophrenia. Antipsychotic drugs, including the first and second generations, allowed some peace from florid psychosis, but not a full return of brain health, resilience, or mental function. Individuals with the illness still fight huge ongoing battles for sanity every day.

Schizophrenia is perhaps the most dramatic and tragic manifestation of mental illness known to mankind. The consequences of the illness for the individual affected, his or her family, and society in general are devastating. A pessimistic view about outcome of schizophrenia is very common among treating clinicians. Sometimes schizophrenia is considered as an illness with permanent deficit brain disorder.

Outcome of schizophrenia

There is a general opinion that schizophrenia is uniformly a disorder with deteriorating course. This is based purely on biased clinical observation. The idea originated directly from the work of Kraepelin. In 19th century, he followed the course of psychoses patients admitted in a custodial institution in Germany. He observed this group to have poor course. He grouped this into single disease entity called dementia praecox(5).

Unfortunately the institution provided residential care for people with the most severe, complex, and debilitating illness. Hence Kraepelin`s conclusion is based on a sample biased towards worst outcome. His observation did not include the complete range of course or outcome of schizophrenia.

Currently the institutional settings are disappearing with more people being treated on outpatient basis. However clinical case load consists mostly of patients with poor prognosis who require frequent contact with psychiatric service, rather than the population sample of all persons diagnosed with schizophrenia and thus prolonging the illusion that schizophrenia is invariably chronic and deteriorating.

Last century has attempted to study the outcome of schizophrenia but results have to be read with caution because data on longitudinal

course remain weak. Moreover studying the longitudinal course and outcome of schizophrenia is difficult because of methodological issues and the difficulties associated with follow up study. Methodological heterogeneity in the past studies are [5]:

1. Sample consisted of admitted patients; 20% patients never get admitted.
2. Different diagnostics used at various period, questions the validity of diagnosis
3. Duration of illness is different at entry of the study
4. Follow up period is variable
5. High attrition rate; more than 20%
6. Different methods used to assess course and outcome.
7. Heterogeneity of the general population.
8. Statistical weakness and confounding biases
9. Differences in management of schizophrenia

The information on natural course of schizophrenia is very limited. Throughout history, psychotic illness was treated at custodial care or religious or cultural way. Since 1950s, most of the schizophrenia patients were treated with neuroleptics. Recent studies which describe the natural course of illness are rare.

A recent study from India was able to examine outcomes in individuals who had never received treatment for schizophrenia (a closer approximation to natural history, notwithstanding the potential influence of cultural context). The course for the untreated group was heterogeneous and rather similar to the course of those who had received treatment [(5)].

Outcome is a multidimensional construct that at the minimum requires description of domains for (1) clinical (symptoms and treatment) and (2) social (e.g., independent living, maintenance of social relationships, and employment). Such domains are likely, in part, to overlap. However, studies examining risk factors for the persistence of schizophrenia should attempt to measure symptom course and social domains independently, as the different domains probably do not co vary directly, and could be more likely be the result of different influences, at least in part.

Outcome of schizophrenia, as measured by various studies, were in part dependent on outcome definition designated for the particular study. Thus some have found better outcome with liberal outcome definition while some have found poor outcome with stringent criteria. Following table lists the studies differing on this issue.

Study	Event Rate	Definition of Poor Symptom Outcome
Muller, 1951 (Germany)	0.41	Insidious chronic course, continual need for full time care
Bland, 1978 (Alberta)	0.16	Severe chronic social and/or intellectual deficit
Stephens,1978 (Baltimore)	0.3	Unimproved, evidence of chronic sustained chronic psychotic symptoms
Ciompi, 1980 (Switzerland)	0.18	Severe chronic phase
Salokangas, 1983 (Finland)	0.24	Continuous psychotic symptoms
Rabiner, 1986 (New YorK0	0.44	Relapsed or in-episode evidence of psychotic symptoms
Sartorius, 1986 (Multinational)	0.4	Unremitting psychotic symptoms
Shepherd,1989 (United Kingdom)	0.43	Remained impaired throughout follow-up
McCreadie,1989 (Scotland)	0.39	Psychotic symptoms present at two year follow up
Mameros,1992 (Germany)	0.17	Psychotic symptoms present at time of follow up
Thara,1994 (India)	0.07	Continuous psychotic symptoms
an der Heiden,1995 (Germany)	0.59	Moderate to severe symptoms at time of follow up
Mason,1996 (United Kingdom)	0.34	Continuous psychotic symptoms in the 2 years prior to follow up
Wieselgren,1996 (Sweden)	0.14	"Poor outcome" evidence of ongoing persistent psychotic symptoms
Ganev,1998 (Bulgaria)	0.45	Chronic continuous psychotic symptoms in the 2 years prior to assessment
Wiersma,1998 (Netherlands)	0.11	Chronic continuous psychotic symptoms over full follow-up time
Vazquez - Barquero,1999 (Spain)	0.09	Chronic continuous psychotic symptoms
Stirling,2003 (United Kingdom)	0.06	GAF=1 at follow up

Poor outcome event rate ranges from 0.06 to 0.44 depending on definition of poor outcome [(5)].

Study	Event Rate	Definition of Good Symptom Outcome
Muller, 1951 (Germany)	0.33	Recovered or substantially improved at the time of discharge
Bland, 1978 (Alberta)	0.21	Symptomatic recovery with no social or intellectual deficit throughout follow-up
Stephens,1978 (Baltimore)	0.24	Recovered "included patients with symptoms but no social impairment"
Ciompi, 1980 (Switzerland)	0.27	Remitted completely or having only residual symptoms
Salokangas, 1983 (Finland)	0.55	Complete recovery or occasional mild psychotic symptoms
Rabiner, 1986 (New YorK0	0.56	Symptomatic remission for at least three months prior to assessment
Sartorius, 1986 (Multinational)	0.39	1 Episode with no or minimal symptoms at follow-up
Shepherd,1989 (United Kingdom)	0.22	Had no relapse during follow-up period
McCreadie,1989 (Scotland)	0.37	Asymptomatic and functioning adequately at the time of follow up
Mameros,1992 (Germany)	0.07	Full remission after first episode
Thara,1994 (India)	0.17	Complete recovery without relapse during the follow up period
an der Heiden,1995 (Germany)	0.25	Full recovery over follow up period
Mason,1996 (United Kingdom)	0.52	Full remission in the 2 years prior to outcome assessment
Wieselgren,1996 (Sweden)	0.3	Dichotomized variable "Good outcome" vs. "Poor outcome"
Ganev,1998 (Bulgaria)	0.38	Complete remission in 2 years prior to follow up assessment
Wiersma,1998 (Netherlands)	0.27	Complete remission , never readmitted
Vazquez - Barquero,1999 (Spain)	0.32	Symptomatic recovery, may have residual symptoms
Stirling,2003 (United Kingdom)	0.47	Categorical measure GAF=4 at time of follow up

Good outcome rate ranges from 0.07 to 0.56 depending on good outcome definition [(5)].

There is a small body of literature comparing the patterns and frequencies of outcome using different perspectives, but few studies have examined multiple perspectives in the same sample. One such study, carried out in South Verona's community care service, found a distinction between objective and subjectively rated outcome. Patients were especially troubled by persistent unmet social and functional needs. This may have important implications for the clinical management of people with schizophrenia, particularly since psychiatric services currently emphasize the pharmacological and psychological treatments, while de-emphasizing social and functional interventions, yet unmet social needs seems to influence disability over the longitudinal course.

Meta analysis of prospective studies done from 1996 to 2003 measuring the outcome of first episode schizophrenia found good outcomes in 42 percent, intermediate outcomes in 35 percent, and poor outcomes in 27 percent. The results are similar to earlier meta-analysis of long-term follow-up studies (published between the turn of the 20th century until 1998 with follow-up period greater than 1 year). The absence of a uniform definition for outcome across studies makes direct comparison difficult [(5)].

Considering the previous researches, studies conclude the following findings.

- The course of schizophrenia is highly variable. Possible course patterns ranges from complete recovery to continuous unremitting. Between such extremes, a group of patients present with multiple episodes of psychosis interspersed with partial remission [(5)].
- Nearly 40% of the patients diagnosed to have schizophrenia have great improvement after an average of 6 years. While this is a significant change compared to previous pessimistic view based on Kraepelin's concept, the very fact that schizophrenia is associated with permanent disability affecting quality of life, personal and social performance cannot be neglected [(5)].
- The illness usually stabilizes in about 5 years. Thus course of illness varies among patients within this period after which it plateaus [(5)].
- There is no reliable set of predictors for course and outcome. The identified predictors amount to only 30% of variance in predicting outcome [(5)].

The World Health Organization (WHO) International Study of Schizophrenia found that the most reliable predictor of negative long-term outcome is unremitting psychosis in the first 2 years following its onset. This finding and others are driving the research along these lines

that is starting to show that early assertive intervention leading to decreases in psychotic symptoms is a promising direction for improved long-term outcomes. Hence achieving symptomatic remission is one step towards good outcome.

Remission and Recovery in Schizophrenia

For decades, the major hindrance for comparison of studies measuring outcome is non availability of uniform definition of remission in schizophrenia.

What is 'Response'?

Response can be defined as "a clinically meaningful improvement in a patient`s psychopathology, irrespective of whether he ⁄ she is still symptomatic at the end or not" [(6)]. Improvement in psychopathology is usually measured by CGI scale or more specific scales like PANSS, BPRS etc.

Response definition based on the CGI scale

The Clinical Global Impression severity (CGI-S) measures severity of illness. Clinician rates the severity of illness based on patient's behavior in last week. Scores can be from 1-7.

Clinical global impression scale improvement (CGI-I) is an intuitive measure of clinical improvement [7]. The CGI-I score assesses the patient`s improvement or worsening since the start of the study. Scores can be from 1-7. 1 = very much improved 2 = much improved 3 = minimally improved 4 = no change 5 = minimally worse 6 = much worse 7 = very much worse

Advantage of CGI

- Clinicians have at least an intuitive idea as to who a much improved or only mildly ill patient is.
- CGI is not very time consuming, because there are only two crosses to make.

Disadvantages of CGI scale:

- Psychometric properties of the CGI scale were never well examined[8][9][10][11][12].
- The CGI scale is insensitive for differences between two interventions[13][14].
- Doesn`t mention about psychopathology

So to avoid these disadvantages, new versions of the CGI scale that are specific for bipolar disorder [15] and schizophrenia [14] have recently been developed.

The schizophrenia version uses the same items and scores. It also provides anchor points for severity, subscales for psychopathology and cognitive functioning with same scoring system. The psychometric property of new version is also validated [14].

Response definitions based on rating scales such as the BPRS or the PANSS

Brief Psychiatric Rating Scale (BPRS) or Positive and Negative Syndrome Scale (PANSS) are well validated scales for assessing psychopathology. They also have anchor points for scoring. Response is measured by percentage of improvement from baseline score.

Disadvantage of PANSS or BPRS in measuring response

Time Consuming and percentage Change from baseline score is not informative about actual severity.

What is 'Remission'?

In general, remission is defined as a state in which there are no clinically significant symptoms. At a glance this definition seems unattainable in schizophrenia. However many studies have found that schizophrenia patients achieve complete remission after treatment even it is first episode [16][17] or multiple episode [18][19][20][21][22].

The symptom complex of schizophrenia is varied and also related to phase of illness. Hence a scale PANSS or BPRS alone cannot define remission at all stage of illness. So in the year 2005, Andreasen et al [2] and van Os et al [1] proposed remission criteria and operationalized it. According to these criteria, a patient is in symptomatic remission if eight specific items of the PANSS are rated mild or better i.e. score 3 or less. It is assumed that score of 3 or less will not interfere with functioning. The remission is sustained if this is maintained for at least 6 months. Remission criteria proposed by Andreasen utilizes the symptoms that are specifically used for diagnosis of schizophrenia based on ICD-10 or DSM IV TR.

Symptomatic Remission and outcome studies

In 2005, the Remission in Schizophrenia Working Group (RSWG) [2] announced the definition of remission in schizophrenia. They also set criteria for its assessment .Remission is defined as a state where the levels of core schizophrenic symptoms are very low such that they don't interfere with individual`s behavior and is insufficient to make a diagnosis of schizophrenia based on the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV).

The criteria consist of two elements:

1) A symptom-based criterion:

The seven diagnostically relevant items from the DSM-IV were then cross-matched to three different rating scales

a) Positive and Negative Syndrome Scale [PANSS]

b) Scale for the assessment of negative symptoms and positive symptoms [SANS/SAPS]

c) Brief Psychiatric Rating Scale [BPRS]

They correspond to eight items in the PANSS and these item score should be ≤3 to classify them as remitted.

The eight symptoms include:

(i) Delusions (ii) Unusual thought content (iii) Hallucinatory behavior

(iv) Conceptual disorganization (v) Mannerisms/posturing

(vi) Blunted affect (vii) Passive/apathetic social withdrawal

(viii) Lack of spontaneity and flow of conversation

Proposed items for remission criteria of psychopathology dimensions and *DSM-IV* and *ICD-10* criteria for schizophrenia. [3]

[a] *For symptomatic remission, maintenance over a 6-month period of simultaneous ratings of mild or less on all items is required. Rating scale items are listed by item number.*

[b] *Use of BPRS criteria may be complemented by use of the SANS criteria for evaluating overall remission.*

			Proposed remission criteria items					
			Scale for Assessment of Positive Symptoms (SAPS) and Scale for Assessment of Negative Symptoms (SANS) items		Positive and Negative Syndrome Scale items		Brief Psychiatric Rating Scale (BPRS) items	
Dimension of psychopathology	**DSM-IV criterion**	**ICD-10criterion**	**Criterion**	**Item**	**Criterion**	**Item**	**Criterion**	**Item**
Psychoticism (reality distortion)	Delusions	Delusions	Delusions(SAPS)	20	Delusions	P1	Grandiosity	8
	Hallucinations	Hallucinations	Hallucinations (SAPS)	7	Hallucinatory behavior	P3	Hallucinatory behavior	12
Disorganization	Disorganized speech	Breaks in train of thought, incoherence or irrelevant speech	Positive formal thought disorder (SAPS)	34	Conceptual disorganization	P2	Conceptual disorganization	4
	Grossly disorganized or catatonic behavior	Catatonic behavior	Bizarre behavior (SAPS)	25	Mannerisms/ posturing	G5	Mannerisms/ posturing	7
Negative symptoms (psychomotor poverty)	Negative symptoms	Negative symptoms	Affective flattening (SANS)	7	Blunted affect	N1	Blunted affect	16
			Avolition-apathy (SANS)	17	Social withdrawal	N4	No clearly related symptom	
			Anhedonia-Asociality (SANS)	22				
			Alogia (SANS)	13	Lack of spontaneity	N6	No clearly related symptom	

The symptom-based criterion can also be assessed using the SANS/SAPS (severity ≤2 points). The BPRS (severity ≤3 points) does not contain adequate representation of negative symptoms and is therefore alone not satisfactory for evaluating remission. The two negative symptoms not included in the BPRS (i.e., “social withdrawal” and “lack of spontaneity”) need to be additionally assessed with PANSS or SANS when BPRS is used.

• A time criterion, which requires that an individual achieves the symptom-based criteria for a minimum of 6 months [(2)].

Advantages of RSWG criteria

- Represent absolute severity of illness at any stage rather than relative improvement.
- Future studies using this criterion may allow for cross trial comparison[(23)(24)(6)].
- European working group welcomed this definition as it will improve clinical trial and decrease treatment expectation [(1)].
- It can be applied for any patients who have been diagnosed with recognized criteria in the past.
- Remission criteria doesn`t invalidate the diagnosis.

- The criteria will not imply or depend on the causal mechanisms underlying the illness, or those that may have brought about remission[1].

Validity of the remission criteria

Since the publication of the remission criteria in March 2005, more than 50 articles on this topic have been published. Reviewing these articles brings about various problems: (i) many of the studies have used the symptom-severity remission criteria omitting the time criterion; (ii) some studies have used other outcome measures than the proposed PANSS, SANS/SAPS, or BPRS scales (e.g., CGI-S); (iii) some studies using the BPRS have not assessed the two missing negative symptoms of the severity criteria; (iv) There is a huge variation with respect to duration of study period; (v) some studies suffered from high dropout rates, if reported at all; (vi) finally, there is a huge variation regarding sample selection (e.g., acute inpatients vs. stable outpatients, first episode vs. multiple episode patients, schizophrenia vs. schizophrenia spectrum disorders, first-episode schizophrenia vs. first-episode psychosis including affective psychosis, patients with co morbid substance use disorder in or excluded, major differences in symptom severity at baseline, etc). Thus, comparability in terms of validity of criteria as well as frequencies and predictors of remission is limited [3].

For validation of remission criteria two different approaches were used:

- Comparison of different definitions of symptomatic remission
- Association of the remission criteria with various outcome dimensions including the overall symptomatic status, functional outcome, quality of life, or other outcome criteria.

Comparison of different definitions of symptomatic remission:

In 2005 and 2006, Sethuraman et al [25] and Dunayevich et al [26] compared the RSWG criteria with the criteria proposed by Lieberman et al [17]. The latter require that a patient achieve 50% reduction in BPRS total score, BPRS scores of ≤3 concurrently on each of the following BPRS psychosis items (unusual thought content, suspiciousness, hallucinations, conceptual disorganization, mannerisms, and posturing), and a Clinical Global Impressions-Severity (CGI-S) score ≤3 for a minimum of 8 weeks.

The first post-hoc analysis by Sethuraman et al [25] concluded that the criteria by Lieberman et al are more stringent than the RSWG criteria.

The second post-hoc analysis by Dunayevich et al [26] concluded that the Lieberman criteria appeared more stringent than the RSWG

criteria, as almost all patients achieving the Lieberman criteria also achieved the RSWG criteria, while the converse was not apparent.

In 2006, van Os and colleagues [27] assessed whether a change in remission status would be associated with changes in clinician-reported and patient-reported functional outcomes. They concluded that change in remission status was associated with large differences in functional outcomes measured with the GAF and, to a lesser extent, in quality of life. This led the authors to conclude that the proposed remission criteria have "clinical validity."

In 2007, Leucht et al concluded that similar to the results by Sethuraman et al [25] and Dunayevich et al, [26] the Lieberman criteria were more stringent than the new RSWG criteria. The criteria proposed by Liberman et al [28] were less restrictive. The authors concluded that a high stringency does not mean the most adequate remission criteria and that a major advantage of the new criteria is that they have been conceptualized and are based on the DSM-IV criteria for schizophrenia.

In 2008, Beitinger concluded that the results of more stringent thresholds within the proposed remission criteria (scores of ≤ 2 or lower) show that a score of mild or better is a "realistic choice, more stringent thresholds yield remission frequencies are not realistic."

In 2009, Cassidy et al found that severity of both positive and negative symptoms is necessary although a 3 month criterion had equal predictive validity to a 6 month criterion.

So compared to other remission criteria RSWG criteria has following advantages

- The new remission criteria by Andreason et al [2] are less stringent than the remission criteria by Lieberman et al [17].
- The time criterion of 6 months was judged to be an appropriate cutoff because "shorter cutoff periods would be insufficient to permit validation of sustained and stable improvement."[1].
- The rationale for selecting positive and negative symptom items for the remission definition seems reasonable because only definitions of remission containing both positive and negative symptoms were predictive of functional outcome, and both are core dimensions of schizophrenia.
- The non-consideration of the symptom items depression and suicidality seems reasonable because this inclusion did not change remission frequencies considerably. This supports the assumption of van Os et al, [1] who judged the exclusion of not diagnostically specific symptoms as appropriate because "they are influenced by other

factors, such as health care provision and cultural issues, which show great geographic and socioeconomic variability."

- Increasing the severity threshold to ≤2 ("very mild" or better) or 1 ("not present") means that hardly anybody will reach remission. This shows that a score of ≤3 `mild' or better is a realistic choice [29].

Association of symptomatic remission to outcome dimensions

To date, 21 articles have published data on the relation of RWSG remission status to other outcome dimensions including the overall symptomatic status, functional outcome, quality of life, or other outcome dimensions. Three publications have assessed differences between already remitted and non remitted patients at baseline[30-32] and 14 publications within a follow-up period of 6 months to 5 years[33-45].Additionally, four publications have presented data on the percentage of patients in symptomatic remission fulfilling other outcome criteria[46-49]. Following table [3] lists various studies measuring symptomatic status, functioning level and other outcome measures among symptomatic remission patients. Remission was defined as per RSWG criteria in these studies.

STUDY	N	Assessment Baseline(BA) Follow up in/ months	Remission Criteria Severity only(SC) Severity AND Time (STC)	Remitted vs. Non remitted patients (NA=Not Assessed; NS=Not specified; mc=mean change; ns=not significant)			
				Overall symptomatic or clinical status	Functioning	Quality of life	Other outcome measures
Helldin et al	211	BA	SC	NS	NS	NA	BC,LCHC,LUN
Ciudad et al	1010	BA	SC	NS	SCOS:8vs11	MCS-12:37vs44	BSC
Dunayevich et al	2771	6	SC	PANSS mc -22 vs. -11	NA	QLS mc +15vs+4	NBC
Buckley et al	184	6	SC	NS	NS	NS	NBC,LR
Emsley et al	462	12	STC	PANSS mc -41 vs. -23	NA	WQLS mc 0.7 vs. 0.3	
Kelly et al	43	12	STC	BPRS 28 vs. 34	NA	QLS mc 57 vs. 53 ns	
Opler et al	675	12	STC	PANSS 52 vs. 75	NA	NA	
Lasser et al	578	12	STC	PANSS 48 vs. 67	NA	NS	
Kane et al	1283	12	STC	CGI-I 1.7 vs. 3.7	NA	NA	
De Hert et al	341	24	STC	PECC 22 vs. 38	GAF 64 vs. 44	NA	
Wunderink et al	125	24	STC	PANSS 44 vs. 52	GSDS 5 vs. 7	WHOQOL 98 vs. 97 NS	
Emsley et al	57	24	STC	PANSS 41 vs. 66	NA	NA	
Addington et al	240	36	STC	PANSS pos & neg 19 vs. 35	NA	QLS 85 vs. 57	
Helldin et al	211	60	SC	NS 49 vs. 66	NA	NA	LCHC
Eberhard et al	115	60	STC	NS	GAF 68 vs. 52	NA	NBC
Boden et al	76	60	SC	NS	Good function 73% vs. 17%	NS	

PANSS = Positive and Negative Syndrome Scale; BPRS = Brief Psychiatric Rating Scale; CGI-I = Clinical Global Impression-Improvement Scale; SCOS = Strauss-Carpenter Outcomes Scale; GAF = Global Assessment of Functioning Scale; GSDS = Groningen Social Disability Schedule; QLS = Quality of Life Scale; WQLS = Wisconsin Quality of Life Scale; MCS-12 = Mental Component Score of the Medical Outcomes Study 12-item Short Form health survey. (3) Other out- come dimensions: LCHC = Less consumption of health care; LR = Less relapse; BC = Better cognition; NBC = No better cognition; BDA = Better drug attitude; LUN = Less unmet needs; BSC = Better social cognition

Overall, patients in symptomatic remission were found to have a better symptomatic status, a better functioning level, and, to a lesser clear extent, a better quality of life and a better cognitive performance.

Symptomatic status

All longitudinal studies which reported data on the relation of RSWG remission to the overall symptomatic status (n=11) have found significantly better symptom status at follow-up or greater psychopathology mean change scores from baseline in remitted vs. non remitted patients. Using the PANSS total score, the difference between remitters and non remitters range between 8 points to 25 points at follow-up with a mean difference of approximately 18 points and a mean change score difference of 17 points (-32 vs. -17). The average PANSS total score in remitters of 47 points underlines the low psychopathology level related to RSWG remission, but also suggests that the proposed criteria encompass symptomatic remission and not complete absence of symptoms.

Important data with respect to the relation of remission to overall psychopathology were published by Opler et al [(36)]. Using the PANSS scale in a 1-year trial of assessing 675 patients, total score of 60 points at time points > 6 months (8 and 12 months), they found 85% patients who

had PANSS score above 60 were not in remission and 75% patients with score below 60 were in remission.

Functional outcome

The five studies, which assessed the relation between remission and functional outcome, all found a significantly better functioning level in remitted vs. non remitted patients.

Study done by De Hert et al,2007 found that patients in remission had better insight in their disorder, a higher level of global functioning and functioned better with respect to daily living tasks, both compared to patients never meeting remission criteria and to patients only meeting the severity criterion but not the time criterion [(39)].

A study done by Ciudad et al, 2007 found that symptomatic remission patients had significant greater Strauss Carpenter Social Functioning Score than unremitted patients. From 1010 patients analyzed, 452 (44.8%) were at clinical remission, but only 103 (10.2%) showed an adequate social and/or vocational functioning [(47)].

Study done by Wunderink et al, 2009 found that most functionally remitted patients were also symptomatically remitted, while a minority of symptomatically remitted patients were also functionally remitted [(48)].

Study done by Eberhard et al, 2009 found that symptomatic remission was strongly associated with global indices of illness, with intact insight and with social outcome (except work/studies) but not with cognition or medication. However he states that “word symptomatic remission could induce too much focus on symptom control” [(44)].

Four studies [(46)(47)(48)(49)] assessed the proportion of patients in remission having a good functional level and found that only 30% to 38% of remitted patients at follow-up displayed an adequate functioning. For the interpretation of this result it is important to know that all three studies have set very stringent definitions of adequate functioning, i.e., GAF >80 points[(46)(47)] or adequate functioning in all 7 social roles in the GSDS scale[(48)] or fulfillment of vocational/occupation and independent living criteria for at least 6 months [(49)]. On the other hand it is arguable whether the chosen severity level “mild or better” is really not associated with impaired functioning as proposed in the original description of the criteria.

(i) The fact of a significant difference in functioning between remitters and non remitters does not necessarily mean that remitters are functioning well.

(ii) That the stringency of the functioning criterion strongly influences the rates of patients who display an adequate functional outcome.

(iii) That functioning in schizophrenia, in particular the vocational/occupational status is probably determined by others factors independent from remission status, e.g. common social and economic barriers of the general public in a given country. Besides, patients' functional outcome at follow-up is strongly influenced by the previous functioning level. For example, in a study by Catty et al, [50] assessing predictors of employment within an 18-month follow-up period in 312 patients with psychotic disorders, previous work history, and RSWG remission where significant predictors of the number of hours employed ($P=0.001$ and $P<0.001$, respectively).

Quality of life

With respect to quality of life, two studies by Kelly et al [35] and Emsley et al [34] have found no differences between remitted and non remitted patients. While Ciudad et al [47], Dunayevich et al [26] and Addington et al [51] found a significantly better quality of life in remitted patients. However, studies assessing the frequency of remitted patients being in

adequate quality of life have found that only 60% to 70% of patients display a satisfying quality of life.

With cognitive functioning

Cognitive performance or neuropsychological improvements were not related to remission status in two of three studies [30][26][33]. Further, the respective studies on cognition do not answer the question whether patients with remission display better cognitive functioning or if patients with a higher level of cognitive performance are more likely to meet remission criteria.

Hofer et al studied the neurocognitive performance in symptomatic remitted patients and its influence on employment status through regression analysis in 2011, Austria. Remitted patients showed significantly higher values on tests of verbal fluency, alertness and optical vigilance. Both symptomatic remission as well as performance on tests of working memory and verbal memory had a significant effect on the patients' employment status.

Sofia Brissos et al. Portugal 2011 found no significant different between remitted and unremitted group in cognitive function

Braw Y et al, Israel, 20012 studied the executive function in relation to symptom dimension severity from full remission to not remitted patients. A graded cognitive profile was evident between the groups. A significant role of negative symptoms in determining executive dysfunction in schizophrenia was also found.

Symptomatic remission and real life functioning

In 2012, a study was done to analyze the relationship between symptomatic remission and real life functioning. It was found that the symptomatic remission criteria has good ecological validity, patients who met the criteria reported fewer positive symptoms, better mood states and partial recovery of reward experience compared with those not in remission. However, remission status was not related to functional recovery, suggesting that the current focus on symptomatic remission may reflect an overly restricted goal [(52)].

Most of the studies were done in developed countries whose outcome is different from developing countries like India. An Indian study compares the cognitive function of remitted patients with that of normal controls [(53)].

However studies measuring the relationship between symptomatic remission and outcome measures are lacking in India. Hence this study tries to measure the social functioning, quality of life and neurocognitive functioning of remitted patients and compare it with unremitted patients.

AIM OF THE STUDY

To study whether symptomatically remitted schizophrenia patients have better quality of life, social functioning and cognitive performance compared to unremitted patients.

OBJECTIVES

1. To assess quality of life, social functioning and cognitive performance in symptomatic remitted and unremitted schizophrenia patients.
2. To compare quality of life, social functioning and cognitive performance in symptomatically remitted with unremitted schizophrenia patients.
3. To find correlation between sociodemographic data, social function and cognitive functioning.

NULL HYPOTHESIS:

1. No difference in quality of life between symptomatically remitted and unremitted patients.
2. No difference in social functioning between symptomatically remitted and unremitted patients.
3. No difference in cognitive function between symptomatically remitted and unremitted patients.

METHODOLOGY

Study Centre: Institute of Mental Health, Madras Medical College, Chennai.

Study type: Cross sectional observational study

Study Sample: 30 patients in remitted group and 30 patients in unremitted group.

Ethics Committee Approval: From Madras Medical College, Chennai

Sample Selection:

Schizophrenia patients who are attending the outpatient department for review are to be screened for the study. Consecutive 30 patients who fulfill remission criteria as defined by RSWG form one group. The other consecutive 30 patients who don`t fulfill remission criteria form second group.

After explaining the complete nature of the study, consent to be obtained from both groups. Patients who are consenting for research are to be taken.

Selection criteria for remission group:

Inclusion criteria

1. Diagnosis of Schizophrenia according to DSM-IV TR.
2. Subjects between 18 – 50 years of age.
3. Formal primary education at least.
4. Symptomatic remission - Score : $\leq$ 3(mild) in each following category of PANSS, Delusions (P1), unusual thought content (A9), Hallucinatory behavior (P3) Conceptual Disorganization (P2), Mannerism /posturing (A5), Blunted Affect (N1),Social withdrawal (N4), Lack of spontaneity (N6)
5. Stability of clinical symptoms in last 4 weeks
6. Giving informed consent.

Exclusion criteria

1. H/o any other psychiatric illness.
2. H/o concurrent neurological illness or systemic illness known to impair cognition.
3. Vision and hearing impaired.
4. H/o head injury with loss of consciousness.
5. H/o any substance dependence in preceding 6 months.

Selection Criteria for Unremitted Group

Those patients who score more than 3 in above said PANSS items for remission criteria but fulfilling other criteria for remitted group will be taken for study.

Age less than 18 years was excluded to prevent inclusion of early onset of schizophrenia that was found to have more cognitive deficits and hence it could confound the results. Age more than 50 years was excluded to avoid age related cognitive decline affecting the results. Patients should have at least primary education to rule out intellectual disability and for easy assessment of cognitive function, as some tests cannot be done in illiterate patients. At the same time patients were enquired about their knowledge on English language as few tests involve English alphabets.

Tools to be employed:

1. MINI PLUS – Structured diagnostic clinical interview for diagnosing Schizophrenia based on DSM IV TR criteria.

2. A semi structured proforma for Socio demographic data and relevant clinical data.

3. Clinical characteristics of patients including age of onset of illness, duration of untreated psychosis, total duration of illness, no of hospitalization in the past.

4. Positive and Negative Symptom Scale (PANSS) to assess symptom severity.

5. Personal and social performance scale (PSP) to assess social functioning.

6. World Health Organization-Quality of Life BREF (WHOQOL-BREF).

7. Global Assessment of Functioning (GAF).

8. Neuropsychological Assessment:

   Rey Auditory–Verbal Learning Test (RAVLT)-Verbal Learning and Memory.

Digit Symbol Coding – Attention, Concentration, Speed of processing.

Trail making test (TMT) A and B – Motor speed and executive function.

Verbal fluency - 1. Phonological 2. Semantic.

Stroop Test – Selective attention, cognitive flexibility and processing speed, executive functions.

Verbal N Back test (1 & 2) – Working Memory.

MINI INTERNATIONAL NEUROPSYCHIATRIC INTERVIEW PLUS

The M.I.N.I. was designed as a brief structured interview for the major Axis I psychiatric disorders in DSM-IV and ICD-10. Validation and reliability studies have been done comparing the M.I.N.I. to the SCID-P for DSM-III-R and the CIDI (a structured interview developed by the World Health Organization for lay interviewers for ICD-10). The results of these studies show that the M.I.N.I. has acceptably high validation and reliability scores, but can be administered in a much shorter period of time (mean 18.7 ± 11.6 minutes, median 15 minutes) than the above referenced instruments. It can be used by clinicians, after a brief training session. Lay interviewers require more extensive training.

The M.I.N.I. Plus is a more detailed edition of the M.I.N.I. Symptoms better accounted for by an organic cause or by the use of alcohol or drugs should not be coded positive in the M.I.N.I. The M.I.N.I. Plus has questions that investigate these issues [54].

PANSS

Positive and Negative Syndrome Scale is a rating scale to assess the psychopathology with gives scoring of positive symptoms, negative symptoms, general psychopathology, anergia, thought disturbance, activation, paranoid, depression [55].

PERSONAL AND SOCIAL PERFORMANCE SCALE (PSP)

The Personal and Social Performance scale [56] is a clinical tool assessing social functioning. The PSP assesses four functioning domains: 1) socially useful activities, including work and study; 2) personal and social relationships; 3) self-care; and 4) disturbing and aggressive behaviors. These are rated on a six-point severity scale (absent to very severe), and based on these, the interviewer assigns a global score on a 100-point scale [57]. It also significantly correlated with Positive and Negative Syndrome Scale (PANSS), Global Assessment of Functioning (GAF) and Quality of Life Scale (QLS) at baseline ($p<0.02$) and with

CGI-S at follow-up ($p<0.01$). In addition, the PSP scale was moderately sensitive to the severity of illness [57].

WHO-QOL BREF

World Health Organization – Quality of Life Bref (WHO-QOL BREF) is an abbreviated version of WHO-QOL 100. The WHOQOL-100 allows detailed assessment of each individual facet relating to quality of life. In certain instances however, the WHOQOL-100 may be too lengthy for practical use. The WHOQOL-BREF Version has therefore been developed to provide a short form quality of life assessment [58].

Quality of life is defined as individuals' perceptions of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns.

Four domains of quality of life are

Physical Domain

- Physical health Activities of daily living, Dependence on medicinal substances and medical aids, Energy and fatigue, Mobility, Pain and discomfort, Sleep and rest, Work Capacity

Psychological Domain

- Psychological Bodily image and appearance, Negative feelings ,Positive feelings, Self-esteem, Spirituality / Religion / Personal beliefs, Thinking, learning, memory and concentration

Social Domain

- Social relationships, Personal relationships, Social support, Sexual activity

Environmental Domain

- Environment Financial resources, Freedom, physical safety and security, Health and social care: accessibility and quality, Home environment, Opportunities for acquiring new information and skills, Participation in and opportunities for recreation / leisure activities, Physical environment (pollution / noise / traffic / climate), Transport.

GLOBAL ASSESSMENT OF FUNCTIONING

In psychiatry, the severity of illness can be scored by Global Assessment of Functioning (GAF). GAF is known worldwide and it is Axis V of the internationally accepted Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition Text Revision (DSM-IV-TR) It is constructed as an overall (global) measure of how patients are doing and rates psychological, social, and occupational functioning, covering the range from positive mental health to severe psychopathology. Internationally, GAF recorded values can be either a single score (only the most severe of the symptom and functioning values is recorded) or separate scores for symptoms (GAF-S) and functioning (GAF-F). For both the GAF-S and GAF-F scales, there are 100 scoring possibilities (1-100) [59].

COGNITIVE FUNCTIONING

Categories used for assessment of cognition in schizophrenia were chosen from Brief Assessment of Cognition in Schizophrenia (BACS) [60]. BACS is a neuropsychological assessment battery that specifically measures following six items

1. Verbal Memory

2. Working Memory

3. Motor Speed

4. Verbal Fluency

5. Attention & Speed of information processing

6. Executive function.

These six items were found to be affected predominantly and were known to predict the outcome of schizophrenia. So the above categories were chosen for the study except motor speed. The corresponding tests for above categories were chosen from NIMHANS battery of neuropsychological Assessment. (61) They are

Verbal Memory – Rey Auditory verbal learning test

Working Memory - Verbal N Back test (1 & 2)

Verbal Fluency – Controlled oral word association test (COWAT)

Category Fluency (Animal Naming Test)

Attention & Speed of information Processing – Digit Symbol Substitution

Executive Function – Trail making Test part B; Trail making B/A ratio; Stroop test

Motor Speed – Trail making test part A

DIGIT SYMBOL SUBSTITUTION

The digit symbol substitution test [Weschler, 1981]is test of visuomotor coordination ,motor persistence ,sustained attention and response speed. Rapid information processing is required in order to substitute the symbols accurately and quickly. The test consists of a sheet in which numbers 1-9 are randomly arranged in 4 rows of 25 squares each. The subject substitutes each number with a symbol using a number symbol key given on a top on a page. Time taken to complete the test forms the score.

CONTROLLED ORAL WORD ASSOCIATION TEST

The controlled Oral word Association test [Benton & Hamsher, 1989] is a measure of phonemic fluency. The subject generates words based on the phonetic similarity of words. The subject generates words beginning with

the letters F, A, S. Proper nouns and names of numbers should be excluded. The same word should not be repeated with a different suffix. In our adaptation, the subjects who do not know the English language are asked to generate words in their mother tongue, commencing with the consonants ‘KA’ PA’’. MA’’ Score: The total number of acceptable new words produced in one minute is noted down for each trial. The average new words generated over 3 trials forms the score.

CATEGORY FLUENCY:

Category fluency is another form of fluency. In category fluency, unlike in phonemic fluency, it is the content of the words, rather than the phonetic similarity of the words, that is regulated. In a test, which measures category fluency, the subject generates words, which belong to a particular semantic category. The Animal names test [Lezak, 1995] requires the generate names of animals for the one minute. The total number of new words generated forms the score.

REY’S AUDITORY VERBAL LEARNING TEST

The Rey’s Auditory Verbal Leaning Test (AVLT) [Schmidt, 1996] adapted different cultures by WHO [Maj et al, 1994] was adopted to suit conditions in India. Rey originally developed the test in 1964. It consists of words designating familiar objects like vehicles, tools, animals

and body parts. There are two lists A and B, with 15 different words in each list. The words were translated into the Indian language of Tamil. Words in List A are presented at rate of one word per second during 5 successive trials. The words are presented in the same order in every trial. Each trial consists of the presentation of all 15 words, immediately followed by recall of the same. In each trial, after the presentation the subject is asked to recall the words but no cues are given. 30 minutes later recall of the words presented was scored.

STROOP TEST

Stroop test, named after John Ridley Stroop, measures the response inhibition. In NIMHANS version, the color names “Blue, Green, Red and Yellow” are printed in capital letter on a paper. The color of the print occasionally corresponds with color designated by the word. The words are printed in 16 rows and 11 columns. Time taken read all the columns and name all the columns forms reading and naming scores respectively. The difference between naming and reading forms the effect score.

TRAIL MAKING TEST

Trail making test Part A & B [Lezak MD] measures cognitive dysfunction related to impairment in frontal lobe impairment. The test has

two parts: Part A involves a series of numbers and the participant is required to connect the numbers in sequential order (similar to a dot-to-dot). Part B involves a series of numbers and letters and the participant is required to alternately connect letters and numbers in sequential order. The test generally requires ability to sequence (Parts A and B), ability to shift cognitive set (Part B), and processing speed (Parts A and B). Part A and Part B are scored separately and expressed in terms of the number of seconds it takes the participant to complete each section.

For executive function, trail making part B was used for set shifting; Stroop test test for response inhibition. Trail making part B, B/A ratio and B-A (difference) were found to measure executive function [62].

For motor speed, finger tapping test would be the ideal one. TMT pat A can be used as a proxy for measure of motor speed [63]. So we have used TMT part A for motor speed.

STATISTICAL ANALYSIS

- Comparison of socio demographic data between two groups: Chi square test
- Comparison of Clinical variables between two groups using t - test
- Comparison of cognitive performance, social functioning and quality of life: t- test
- Pearson Correlation between social functioning, sociodemographic data, clinical variables and cognitive functioning

All statistical analysis was done using SPSS version 20 statistical software. Level of significance was kept at $p<0.05$. $p<0.01$ is highly significant.

RESULTS

The present study compares two groups of schizophrenia patients. One group is comprised of schizophrenia patients under remission as defined by RSWG criteria. They will be called as 'Remitted' hereafter. The other group is schizophrenia patients not under remission who will be called as 'Unremitted' hereafter. Each group consists of 30 patients and they are compared with appropriate statistics as mentioned then and there.

SOCIODEMOGRAPHIC DATA

		Group				Total		P-Value
		Remitted		Unremitted				
		N	%	N	%	N	%	
Sex	Male	24	80.0	22	73.3	46	76.7	0.542
	Female	6	20.0	8	26.7	14	23.3	
Education	School	10	33.3	18	60.0	28	46.7	**0.040***
	College	20	66.7	12	40.0	32	53.3	
Occupation	Unemployed	8	26.7	23	76.7	31	51.7	**<0.001****
	Employed	22	73.3	7	23.3	29	48.3	
Income/ Month	No income	10	33.3	23	76.7	33	55.0	**0.001****
	Low income	3	10.0	1	3.3	4	6.7	

	Middle income	13	43.3	6	20.0	19	31.7	
	High income	4	13.3	0	.0	4	6.7	
Marital Status	Divorced	2	6.7	1	3.3	3	5.0	0.384
	Married	14	46.7	15	50.0	29	48.3	
	Unmarried	14	46.7	11	36.7	25	41.7	
	Separated	0	.0	3	10.0	3	5.0	
Religion	Hindu	28	93.3	25	83.3	53	88.3	0.506
	Christian	1	3.3	3	10.0	4	6.7	
	Muslim	1	3.3	2	6.7	3	5.0	
Area	Urban	22	73.3	20	66.7	42	70.0	0.064
	Semi Urban	8	26.7	5	16.7	13	21.7	
	Rural	0	.0	5	16.7	5	8.3	
Total		30	100.0	30	100.0	60	100.0	

*$p<0.05$ significant **$p<0.01$ significant

Among the single in marital status one man and two women are divorced; three women are separated from husband. There is significant difference between the groups in education, employment and income per month with remitted group having better education, employment and income per month.

ILLNESS DETAILS

Illness Parameter	Group	N	Mean	Std. Deviation	p value
Age	Remitted	30	34.00	6.314	0.279
	Unremitted	30	36.10	8.430	
Onset of illness(Age)	Remitted	30	25.97	4.979	0.120
	Unremitted	30	24.03	4.499	
Duration of Untreated Psychosis	Remitted	30	2.87	1.548	**0.015****
	Unremitted	30	4.00	1.930	
Total duration of illness	Remitted	30	8.03	5.555	**0.023***
	Unremitted	30	12.07	7.634	
No of hospitalization in past	Remitted	30	1.93	1.799	0.862
	Unremitted	30	1.87	1.074	
PANSS Positive	Remitted	30	7.80	3.809	**<.001****
	Unremitted	30	17.97	4.263	
PANSS Negative	Remitted	30	11.47	3.589	**<.001****
	Unremitted	30	26.23	5.110	
PANSS General Psychopathology	Remitted	30	19.83	5.663	**<.001****
	Unremitted	30	35.20	7.097	
PANSS Total Score	Remitted	30	39.10	8.695	**.<.001****
	Unremitted	30	79.40	10.858	

*$p<0.05$ significant **$p<0.01$ significant

There is no significant difference between groups in age, age of onset of illness, no of hospitalization in the past. There is significant difference between groups in duration of untreated psychosis, total duration of illness, PANSS Positive, PANSS Negative, PANSS General Psychopathology and PANSS Total score.

QUALITY OF LIFE

Domain	Group	N	Mean	Std. Deviation	P-Values
QOL physical	Remitted	30	59.47	10.595	**0.003****
	Unremitted	30	51.83	8.579	
QOL psychological	Remitted	30	62.03	11.874	0.175
	Unremitted	30	57.77	12.204	
QOL social	Remitted	30	60.97	10.115	**<0.001****
	Unremitted	30	44.73	15.373	
QOL environmental	Remitted	30	63.80	8.475	**<0.001****
	Unremitted	30	42.67	12.609	

*$p<0.05$ significant **$p<0.01$ significant

The mean score of each domain for remitted group is higher than the unremitted group. There is significant difference between groups in physical, social and environmental domain.

There is no significant difference between the groups in psychological domain.

PERSONAL AND SOCIAL PERFORMANCE

Domain	Group	N	Mean	Std. Deviation	P value
PSP Self care	Remitted	30	1.87	0.819	**<0.001****
	Unremitted	30	2.80	1.031	
PSP Social relationship	Remitted	30	1.97	1.129	**<0.001****
	Unremitted	30	3.10	0.995	
PSP Useful activities	Remitted	30	1.53	0.973	**<0.001****
	Unremitted	30	3.50	1.432	
PSP Aggression	Remitted	30	1.40	0.621	**<0.001****
	Unremitted	30	2.57	1.331	
PSP Total Score	Remitted	30	65.57	9.335	**<0.001****
	Unremitted	30	50.00	12.999	

*P<0.05 significant **p<0.01 significant

The mean score of each domain for remitted group is greater than the unremitted group. There is significant difference between the two groups in each domain.

GLOBAL ASSESSMENT OF FUNCTIONING (GAF)

	Group	N	Mean	Std. Deviation	P value
GAF	Remitted	30	63.03	8.779	**<0.001****
	Unremitted	30	48.73	11.176	**<0.001****

*p<0.05 significant **p<0.01 significant

The mean GAF score of remitted group is greater than the unremitted group. There is significant difference between the groups in the GAF score.

PERCENTAGE OF PATIENTS WITH ADEQUATE FUNCTIONING

	GAF		PSP	
Group	0-60	61-100	0-70	71-100
Remitted (n %)	53.33	46.66	80	20
Unremitted (n %)	83.33	16.66	100	0

GAF score of 61 and above was found to have mild symptoms or no symptoms/difficulties. GAF score above 80 was considered as adequate functioning [46]. Since none of our sample reached GAF score of 80, a cut off of 60 was chosen for comparison of adequacy of functioning.

In remitted group, 46.66% was found to have adequate functioning with mild symptoms and only 16.66% was found to have adequate functioning with mild symptoms.

PSP score of 71 and above is found to have mild or no difficulty in social functioning [64]. Only 20 percent of remission group was found to have adequate social functioning and none in unremitted group.

COGNITIVE FUNCTIONING

Attention and speed of processing

DIGIT SYMBOL SUBSTITUTION

	Group	N	Mean (Sec)	Std. Deviation	P value
Digit Symbol Substitution	Remitted	30	241.33	39.031	**<0.001****
	Unremitted	30	307.33	81.074	**<0.001****

*p<0.05 significant **p<0.01 significant

The mean duration for digit symbol substitution in remitted group is 241.33 second and in unremitted group is 307.33 second. There is significant difference between their scores.

Motor Speed

TRAIL MAKING TEST A (TMT A)

	Group	N	Mean (sec)	Std. Deviation	P value
TMT A	Remitted	30	63.03	17.661	**0.003****
	Unremitted	30	78.50	20.263	**0.003****

*p<0.05 significant **p<0.01 significant

The mean duration for completion of trail making test part A is 63.03 second and 78.50 second in remitted and unremitted group respectively. There is significant difference between the groups in the mean scores.

Verbal learning and Memory

REY AUDITORY VERBAL LEARNING TEST (RAVLT)

Trials	Group	N	Mean	Std. Deviation	P value (ns)
Trial 1	Remitted	30	7.03	1.217	0.092
	Unremitted	30	6.50	1.196	
Trail 2	Remitted	30	7.47	1.224	0.117
	Unremitted	30	7.03	.850	
Trial 3	Remitted	30	7.60	1.404	0.434
	Unremitted	30	7.33	1.213	
Trial 4	Remitted	30	7.87	1.592	0.280
	Unremitted	30	7.47	1.224	
Trial 5	Remitted	30	8.77	1.569	0.228
	Unremitted	30	8.30	1.393	
Verbal Learning	Remitted	30	38.73	6.119	0.142
	Unremitted	30	36.63	4.723	
Immediate Recall	Remitted	30	7.00	1.259	0.437
	Unremitted	30	6.77	1.040	
Delayed Recall	Remitted	30	6.10	1.348	0.476
	Unremitted	30	5.87	1.167	
LTPR	Remitted	30	69.78	9.810	0.778
	Unremitted	30	70.53	10.62	
Recognition Hits	Remitted	30	9.03	2.205	0.827
	Unremitted	30	8.93	1.172	
Recognition Errors	Remitted	30	9.00	2.913	0.504
	Unremitted	30	9.43	1.995	

LTPR – Long term percent retention *p<0.05 significant ns-not significant

The first five trials and Total of the five trials measures verbal learning. The mean score of each trial for remitted group is higher than the unremitted group. There is no significant difference between the groups in each trial and total score.

The immediate recall, delayed recall and LTPR are measures of memory. The mean score of these variables is higher in remitted group compared to unremitted group. But there is no significant difference between the groups.

Working memory

VERBAL N-BACK TEST

	Group	N	Mean	Std. Deviation	P value
N-Back 1 Score	Remitted	30	8.73	.868	**0.036***
	Unremitted	30	9.27	1.048	
N-Back 2 Score	Remitted	30	8.90	.662	**0.007****
	Unremitted	30	8.23	1.135	

*$p<0.05$ significant **$p<0.01$ significant

The mean score of verbal n-back tests 1 and 2 for remitted group is higher than the unremitted group. There is statistically significant difference between their mean scores for N – Back 1 Score. There is very high significant difference between the groups in N – Back 2 Score.

Verbal Fluency

COWAT (CONTROLLED ORAL WORD ASSOCIATION TEST)

	Group	N	Mean	Std. Deviation	P value
COWAT	Remitted	30	7.20	2.058	**<0.001****
	Unremitted	30	4.33	0.959	**<0.001****

*p<0.05 significant **p<0.01 significant

COWAT test measures phonological fluency. The mean score of remitted group is greater than the unremitted group. There is significant difference between the groups.

ANIMAL NAMING TEST

	Group	N	Mean	Std. Deviation	P value
Animal Naming Test	Remitted	30	8.03	2.539	**<0.001****
	Unremitted	30	5.27	1.311	**<0.001****

*p<0.05 significant **p<0.01 significant

Animal naming test measures the categorical fluency or semantic fluency. The mean score of remitted group is greater than the unremitted group. There is significant difference between the groups in their scores.

Executive Functioning

TRAIL MAKING PART B (TMT B)

	Group	N	Mean(sec)	Std. Deviation	P value
TMT-Part B	Remitted	30	145.00	48.831	**<0.001****
	Unremitted	30	198.33	55.029	
TMT B-A	Remitted	30	81.97	43.042	**0.001****
	Unremitted	30	119.83	38.585	
TMT B/A	Remitted	30	2.3770	.74479	0.281
	Unremitted	30	2.5410	.35412	

*p<0.05 significant **p<0.01 significant

In *trail making test Part B*, the mean score of remitted group is lesser than the unremitted group. There is high significant difference between the groups also.

Trail making test B – A: The score is calculated by subtracting TMT part B score from part A. This eliminates motor speed as confounding variable. The mean score for remitted score is lesser than the unremitted group and there is significant difference between the groups.

Trail making test B/A: The score is calculated by division of Part B score with Part A score. The mean score of remitted score is lesser than the unremitted group. There is no significant difference between the groups.

STROOP TEST

	Group	N	Mean	Std. Deviation	P value (ns)
Stroop-Reading	Remitted	30	122.80	22.188	0.935
	Unremitted	30	123.23	18.532	
Stroop-Naming	Remitted	30	371.80	75.983	0.967
	Unremitted	30	372.60	74.456	
Stroop-Effect Score	Remitted	30	249.00	59.989	0.982
	Unremitted	30	249.37	65.855	

ns-not significant

The mean score for remitted group is lesser than the unremitted group. There is no significant difference between the groups. The mean scores are almost equal.

Correlation between Sociodemographic and Psychopathology data

	PANSS Positive	PANSS Negative	PANSS General Psychopathology
Age	0.072	0.135	0.138
Sex	0.095	-0.027	0.078
Education	-0.234	**-0.309***	**-0.314***
Employment	**-0.556****	**-0.571****	**-0.600****
Income per month	**-0.472****	**-0.508****	**-0.612****
Marital status	-0.126	-0.017	0.148
Religion	0.096	0.197	**0.349****
Background	0.108	-0.039	0.050
Pearson Correlation [r]			
**. Correlation is significant at the 0.01 level (2-tailed).			
*. Correlation is significant at the 0.05 level (2-tailed).			

There is significant correlation between the dimensions of all PANSS psychopathology and employment & income per month. There is significant correlation between PANSS Negative & General Psychopathology and Education.

Correlation between Illness factors and Psychopathology

	PANSS Positive	PANSS Negative	PANSS General Psychopathology
Onset of illness(Age)	**-0.285***	-0.231	-0.165
Duration of Untreated Psychosis	**0.327***	0.250	**0.320***
Total duration of illness	**0.275***	**0.305***	**0.263***
No of hospitalization in past	0.149	0.026	0.094
Pearson Correlation [r]			
**. Correlation is significant at the 0.01 level (2-tailed).			
*. Correlation is significant at the 0.05 level (2-tailed).			

There is significant positive correlation PANSS positive with duration of untreated psychosis and total duration of illness. There is significant negative correlation PANSS positive with age of onset of illness.

There is significant positive correlation of PANSS negative with total duration of illness.

There is significant positive correlation between PANSS general psychopathology and duration of untreated psychosis & total duration of illness.

Correlation between Cognitive function and Psychopathology

	PANSS Positive	PANSS Negative	PANSS General Psychopathology
TMT-A	**0.323***	**0.296***	**0.334****
TMT-B	**0.405****	**0.465****	**0.481****
TMT B-A	**0.379****	**0.469****	**0.472****
TMT B/A	0.148	**0.272***	0.238
Stroop-Effect Score	-0.003	0.029	-0.041
N-Back 1 Score	0.053	**0.325***	0.094
N-Back 2 Score	**-0.287***	-0.212	**-0.406****
Animal naming test	**-0.440****	**-0.474****	**-0.297***
COWAT	**-0.522****	**-0.604****	**-0.567****
Digit Symbol Substitution	**0.326***	**0.376****	**0.363****
Verbal Learning	-0.246	-0.095	-0.156
Immediate Recall	0.003	0.025	-0.086
Delayed Recall	-0.038	0.009	-0.118
LTPR	0.184	0.067	-0.028
Pearson Correlation [r]			
**. Correlation is significant at the 0.01 level (2-tailed).			
*. Correlation is significant at the 0.05 level (2-tailed).			

TMT A & B, TMT B - A, Digit symbol substitution has significant positive correlation with all domains of PANSS psychopathology. Verbal semantic (Animal naming test) and Phonological fluency have significant negative correlation with all domains of PANSS psychopathology. TMT B/A have significant positive correlation with PANSS negative domain. No signification correlation of PANSS with Stroop test, verbal learning and memory.

Correlation between Sociodemographic data and Quality of life

	WHO-QOL Physical	WHO-QOL Psychological	WHO-QOL Social	WHO-QOL Environmental
Age	-0.030	0.006	-0.123	-0.072
Sex	-0.178	-0.087	0.047	-0.077
Education	0.207	0.081	0.165	0.249
Employment	**0.637****	**0.588****	**0.635****	**0.603****
Income per month	**0.652****	**0.523****	**0.577****	**0.555****
Marital status	-0.095	-0.088	-0.040	-0.119
Religion	-0.132	-0.142	-0.109	-0.151
Background	-0.091	-0.061	-0.178	-0.171
Pearson correlation [r]				
**. Correlation is significant at the 0.01 level (2-tailed).				
*. Correlation is significant at the 0.05 level (2-tailed).				

Employment and income per month have significant positive correlation with the quality of life. Other variables have no significant correlation with quality of life.

Correlation between Illness parameters and Quality of Life

	WHO-QOL Physical	WHO-QOL Psychological	WHO-QOL Social	WHO-QOL Environmental
Onset of illness(Age)	0.185	0.116	0.175	0.179
Duration of Untreated Psychosis	-0.185	-0.234	**-0.258***	-0.248
Total duration of illness	-0.161	-0.074	-0.254	-0.201
No of hospitalization in past	-0.233	**-0.435****	-0.134	-0.116
PANSS Positive	**-0.453****	**-0.356****	**-0.562****	**-0.655****
PANSS Negative	**-0.529****	**-0.290***	**-0.577****	**-0.687****
PANSS General Psychopathology	**-0.463****	**-0.350****	**-0.612****	**-0.678****
PANSS Total Score	**-0.540****	**-0.370****	**-0.656****	**-0.754****
Pearson correlation [r]				
**. Correlation is significant at the 0.01 level (2-tailed).				
*. Correlation is significant at the 0.05 level (2-tailed).				

There is significant negative correlation of quality of life with all domains of PANSS. There is significant negative correlation between WHO-QOL social and duration of untreated psychosis. There is significant negative correlation between WHO-QOL psychological and no of hospitalization.

Correlation between Cognitive function and Quality of Life

	WHO-QOL Physical	WHO-QOL Psychological	WHO-QOL Social	WHO-QOL Environmental
TMT-A	-0.152	-0.138	**-0.277***	**-0.332****
TMT-B	**-0.365****	-0.221	**-0.396****	**-0.442****
TMT B-A	**-0.405****	-0.224	**-0.388****	**-0.422****
TMT B/A	**-0.319***	-0.139	-0.204	-0.184
Stroop-Effect Score	-0.149	-0.007	0.102	0.013
N-Back 1 Score	-0.056	0.168	-0.062	-0.216
N-Back 2 Score	0.084	0.055	0.235	**0.282***
Animal naming test	0.052	-0.078	0.193	**0.329***
COWAT	0.245	0.054	**0.325***	**0.441****
Digit Symbol Substitution	**-0.279***	-0.059	-0.122	-0.221
Verbal Learning	-0.084	-0.092	0.068	0.212
Immediate Recall	**-0.292***	**-0.261***	-0.072	0.019
Delayed Recall	-0.175	-0.182	0.031	0.079
LTPR	-0.135	-0.173	-0.024	-0.158
Pearson correlation [r]				
**. Correlation is significant at the 0.01 level (2-tailed).				
*. Correlation is significant at the 0.05 level (2-tailed).				

WHOQOL Physical has significant negative correlation with TMT B, TMT B-A, TMT B/A, digit symbol substitution and immediate recall in RAVLT. WHOQOL Psychological has significant negative correlation with immediate recall in RAVLT. WHOQOL Social has negative correlation with TMT A, TMT B, TMT B-A and positive correlation with verbal phonological (COWAT) fluency. WHOQOL Environment has significant negative correlation with TMT A, TMT B, TMT B/A and positive correlation with N-Back 2 score and phonological verbal fluency.

Correlation between Sociodemographic data and Social Functioning

	GAF	PSP Total Score
Age	-0.207	-0.113
Sex	-0.253	-0.165
Education	**0.358****	**0.352****
Employment	**0.816****	**0.797****
Income per month	**0.793****	**0.777****
Marital status	-0.195	-0.236
Religion	-0.176	-0.216
Background	-0.247	**-0.271***
**. Correlation is significant at the 0.01 level (2-tailed).		
*. Correlation is significant at the 0.05 level (2-tailed).		

Personal and Social Performance (PSP) score has significant positive correlation with education, employment, income per month. It has significant negative correlation with background. GAF has significant positive correlation with education, employment and income per month as for PSP.

Correlation between Illness factors and Social Functioning

	GAF	PSP Total Score
Onset of illness(Age)	**0.269***	**0.281***
Duration of Untreated Psychosis	**-0.438****	**-0.456****
Total duration of illness	**-0.409****	**-0.317***
No of hospitalization in past	-0.220	-0.160
PANSS Positive	**-0.613****	**-0.592****
PANSS Negative	**-0.658****	**-0.598****
PANSS General Psychopathology	**-0.639****	**-0.653****
PANSS Total Score	**-0.714****	**-0.691****
**. Correlation is significant at the 0.01 level (2-tailed).		
*. Correlation is significant at the 0.05 level (2-tailed).		

Personal and Social Performance and GAF have significant positive correlation with age of onset of illness and significant negative correlation with duration of untreated psychosis, total duration of illness and all domains of PANSS score.

Correlation between Cognitive Function and Social Functioning

	GAF	PSP Total Score
TMT-A	**-0.351****	**-0.347****
TMT-B	**-0.508****	**-0.489****
TMT B-A	**-0.500****	**-0.478****
TMT B/A	**-0.278***	-0.240
Stroop-Effect Score	0.022	0.011
N-Back 1 Score	-0.154	-0.081
N-Back 2 Score	0.081	0.125
Animal naming test	**0.312***	**0.259***
COWAT	**0.422****	**0.433****
Digit Symbol Substitution	**-0.296***	**-0.322***
Verbal Learning	-0.023	-0.046
Immediate Recall	-0.250	-0.233
Delayed Recall	-0.241	-0.225
LTPR	-0.202	-0.179
**. Correlation is significant at the 0.01 level (2-tailed).		
*. Correlation is significant at the 0.05 level (2-tailed).		

Personal and Social Performance and GAF has significant negative correlation with TMT A, TMT B, TMT B-A and digit symbol substitution. PSP and GAF have significant positive correlation with verbal phonological (COWAT) and semantic fluency scores. GAF has significant negative correlation with TMT B/A.

DISCUSSION

AGE

The mean age of patients in remitted group was 34 years and unremitted group was 35 years. This is because of the sample selection criteria which specify age group between 18 years and 50 years. A similar study done in India in outpatient setting has similar age group of schizophrenia patients [65]. There is no significant difference between the groups in age. Age is not found to correlate with psychopathology, quality of life and social functioning in this study.

SEX

Sample consists mostly of males; 80% in remitted group and 73% in unremitted group. This may be because of study setting which is done in outpatient department. A future study measuring frequency distribution of sex of the patients attending outpatient department may find a reason. Moreover few female patients refused to participate in study because of time constraint and few were excluded as they had no formal education. No sex difference observed in our study and was found not to correlate with any outcome measures.

EDUCATION

Patients in remitted group were better educated than the unremitted group in our sample. There was significant difference between the groups with more remitted population having attended college.

EMPLOYMENT, INCOME PER MONTH

Remitted group had a significant population being employed and good income per month in terms of income per month. Employment is correlated with positive outcomes in social functioning, symptom level, quality of life and self esteem [66].

AGE OF ONSET OF ILLNESS

The mean age of onset of illness is 26 years in remitted group and 24 years in unremitted group. The peak age of onset of illness is from 10 to 25 years [67]. Since the study included population between 18-50 years, our study comprised of relatively late onset. Our study findings showed that earlier age of onset is associated with greater psychopathology and poor outcome.

DURATION OF UNTREATED PSYCHOSIS

The mean Duration of untreated psychosis in our sample is 36 months and 48 months in remitted and unremitted group respectively.

Though the mean duration of untreated psychosis is 6 months to 2 years, studies reporting DUP as long as 10 years have been reported which is primarily because of lack of availability and accessibility of mental health services rather than the psychosis remaining 'unidentified' [68][69]. In our study, it was found that longer the duration of untreated psychosis; greater the PANSS positive and general psychopathology scores. Similar to other studies [70], duration of untreated psychosis was found to strong negative correlation with outcome scores.

TOTAL DURATION OF ILLNESS

The mean total duration of illness is 8 years and 12 years for remitted and unremitted group respectively. Total duration of illness also had positive correlation with symptom severity and negative correlation with outcome of schizophrenia as in previous research [71].

NO OF HOSPITALIZATION IN THE PAST

Hospitalization is a good proxy outcome measure in schizophrenia [72]. However there is no significant difference the groups in our study. Hospitalization was also not found to correlate with outcome and quality of life in our study.

PANSS

Since we are dividing schizophrenia patients into two groups based on PANSS, it was expected to have significant difference. Remitted group`s total mean score was 40. The mean score of total PANSS in unremitted group is 80. Better symptomatic status as reported by many studies [30-40] is replicated here.

QUALITY OF LIFE

In our study, there was significant difference between the groups in physical, psychological and environmental domain WHOQOL score. This is consistent with similar studies done recently[1][73][45][32][26][34][37] and contrary to some studies which found weak or no correlation between symptom severity and quality of life as such[74-76].

The subjective quality of life was also better when the patient employed and having better income per month. In our study duration of untreated psychosis has negative correlation with WHO QOL social domain. This is consistent with studies reporting better social functioning with less duration of untreated psychosis [70]. The relationship between quality of life and neurocognitive functioning is complex. Few domains have significant relationship with cognitive functioning. Verbal fluency and motor speed have significant positive correlation with quality of life.

Memory and executive functions have no significant relationship. These findings are contrary to previous studies [77][78].

SOCIAL FUNCTIONING

The social functioning of remitted group was better than the unremitted group as measured by Global Assessment of Functioning and Personal and Social Performance score. This is consistent with many recent studies [32][39][79][44][76]. Remitted group was also significantly better in all four domains of personal and social performance scale.

Severity of symptom also had negative impact on social functioning along with other sociodemographic and illness factors like education, employment, duration of untreated psychosis, age of onset and total duration of illness.

However in remission group only 20% had adequate social functioning when measured by PSP score. None of the patient achieved adequate functioning when GAF score of 80 was set as cut off. Though there are significant differences between the groups in GAF and PSP score, symptom remission alone is not adequate for social functioning.

COGNITIVE FUNCTIONING

Remitted group was better than the unremitted group in attention, speed of processing, motor speed, working memory, verbal fluency. There is no significant difference between the groups in verbal learning and executive functions, in part.

Cognitive function of symptomatically remitted patients is better than unremitted group. Similar finding has been observed in recent study also [31]. But the results are contrary to other studies as well [34][44].

Symptom dimensions also had significant correlation with correlation in attention, speed of processing, motor speed, verbal fluency, working memory. Negative syndrome dimension had significant correlation with executive function, as measured by TMT B/A. This is similar to previous research by Braw et al and Hofer et al.

CONCLUSION

- Symptomatic remission group is found to have better quality of life and outcome in terms of personal and social performance.
- Symptomatic remission group is found to have better cognition in attention, speed of processing, motor speed, working memory and verbal fluency.
- Education and duration of untreated psychosis were found to have consistent correlation with symptom status and outcome measures.

LIMITATIONS

- Study was conducted in tertiary care centre which may not be representative of general population.
- Study sample was selected from review OPD. Patients who are coming to review OPD are either more functional or more symptomatic. Hence it may not represent the cases in between these two extremes. Results cannot be generalized for schizophrenia population.
- Study would have been better if normal control group is included for comparison of cognitive functioning.
- Addition of a normal control group would have allowed better understanding of real life functioning of remitted group if they were compared.
- Statistical analysis for cognitive assessment would have been better if analyzed using ANCOVA with education as a co variant because there is statistical significant difference between groups.
- Effect of medication on cognitive function was not taken into account.
- Study would have been better if more factors like family history, drug compliance, drug attitude, pre morbid functioning, expressed emotions etc were analyzed as it may throw some light over predictors of remission.

RECOMMENDATIONS

Symptomatic remission is associated with better quality of life, social functioning and cognitive function, to some extent.

Hence achieving symptomatic remission should be kept as one goal for attaining recovery.

Future studies should analyze the following issues:

1. Predictors of symptomatic remission.

2. Assessment of symptomatic remission using RSWG criteria is a good indicator of functional recovery. So future studies using this criteria may allow cross comparison.

3. Drug trials should be aimed at achieving symptomatic remission rather than just response.

4. Non pharmacological interventions in achieving symptomatic remission and maintaining symptomatic remission should be studied.

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PATIENT DETAILS

Patient ID Age - Sex - M/F Date Time

Education - Illiterate / school educated / college educated

Occupation - Working / Not working

Income - / Month

Marital status - Married / Unmarried / Separated / Divorced

Religion - Hinduism / Islam / Christianity / Others

Background - Rural / Urban

Onset of Illness (Age) -

Duration of Untreated Psychosis -

No of Hospitalization in past -

PANSS- [P]…… [N]……..[G]…….[T]…..

WHO QOL Bref: Physical…. Psy….. Social…. Environmental……

GAF –

PSP Score – Self care…… Relationship…. ..Useful Activity…….. Aggression……

TMT-A

TMT-B

STROOP TEST: READING NAMING EFFECT SCORE

VERBAL N BACK TEST: 1 Back Score…….. 2 Back Score…….

DIGIT SYMBOL SUBSTITUITION –

VERBAL FLUENCY Phonological = Semantic =

VERBAL LEARNING TEST

0=Absent 1=Minimal 2=Mild 3=Moderate 4=Moderate severe 5=Severe 6=Extreme

1-12 dupl

CARD NUMBER [_ _] 13-14

POSITIVE SCALE (P)

P1 Delusions [_] 15
Beliefs which are unfounded, unrealistic, and idiosyncratic. Basis for rating: Thought content expressed in the interview and its influence on social relations and behavior.

P2 Conceptual disorganization [_] 16
Disorganized process of thinking characterized by disruption of goal-directed sequencing, e.g., circumstantiality, tangentiality, loose associations, non sequiturs, gross illogicality, or thought block. Basis for rating: Cognitive-verbal processes observed during the course of interview.

P3 Hallucinatory behavior [_] 17
Verbal report or behavior indicating perceptions which are not generated by external stimuli. These may occur in the auditory, visual, olfactory, or somatic realms. Basis for rating: Verbal report and physical manifestations during the course of interview as well as reports of behavior by primary care workers or family.

P4 Excitement [_] 18
Hyperactivity as reflected in accelerated motor behavior, heightened responsivity to stimuli, hypervigilance, or excessive mood lability. Basis for rating: Behavioral manifestations during the course of interview as well as reports of behavior by primary care workers or family.

P5 Grandiosity [_] 19
Exaggerated self-opinion and unrealistic convictions of superiority, including delusions of extraordinary abilities, wealth, knowledge, fame, power, and moral righteousness. Basis for rating: Thought content expressed in the interview and its influence on behavior.

P6 Suspiciousness/persecution [_] 20
Unrealistic and exaggerated ideas of persecution, as reflected in guardedness, a distrustful attitude, suspicious hypervigilance, or frank delusions that others mean one harm. Basis for rating: Thought content expressed in the interview and its influence on behavior.

P7 Hostility [_] 21
Verbal and nonverbal expressions of anger and resentment, including sarcasm, passive-aggressive behavior, verbal abuse, and assaultiveness. Basis for rating: Interpersonal behavior observed during the interview and reports by primary care workers or family.

NEGATIVE SCALE (N)

N1 Blunted affect [_] 22
Diminished emotional responsiveness as characterized by a reduction in facial expression, modulation of feelings, and communicative gestures. Basis for rating: Observation of physical manifestations of affective tone and emotional responsiveness during the course of interview.

N2 Emotional withdrawal [_] 23
Lack of interest in, involvement with, and affective commitment to life's events. Basis for rating: Reports of functioning from primary care workers or family and observation of interpersonal behavior during the course of interview.

N3 Poor rapport [_] 24
Lack of interpersonal empathy, openness in conversation, and sense of closeness, interest, or involvement with the interviewer. This is evidenced by interpersonal distancing and reduced verbal and nonverbal communication. Basis for rating: Interpersonal behavior during the course of interview.

0=Absent 1=Minimal 2=Mild 3=Moderate 4=Moderate severe 5=Severe 6=Extreme

N4 Passive/apathetic social withdrawal [_] 25
Diminished interest and initiative in social interactions due to passivity, apathy, anergy, or avolition. This leads to reduced interpersonal involvements and neglect of daily activities.

N5 Difficulty in abstract thinking [_] 26
Impairment in the use of the abstract-symbolic mode of thinking, as evidenced by difficulty in classification, forming generalizations, and proceeding beyond concrete or egocentric thinking in problem-solving tasks. Basis for rating: Responses to questions on similarities and proverb interpretation, and use of concrete vs. abstract mode during the course of interview.

N6 Lack of spontaneity and flow of conversation [_] 27
Reduction in the normal flow of communication associated with apathy, avolition, defensiveness, or cognitive deficit. This is manifested by diminished fluidity and productivity of the verbal-interactional process. Basis for rating: Cognitive-verbal processes observed during the course of interview.

N7 Stereotyped thinking [_] 28
Decreased fluidity, spontaneity, and flexibility of thinking, as evidenced in rigid, repetitious, or barren thought content. Basis for rating: Cognitive-verbal processes during the course of interview.

GENERAL PSYCHOPATHOLOGY SCALE (G)

G1 Somatic concern [_] 29
Physical complaints or beliefs about bodily illness or malfunctions. This may range from a vague sense of ill being to clear-cut delusions of catastrophic physical disease. Basic for rating: Thought content expressed in the interview.

G2 Anxiety [_] 30
Subjective experience of nervousness, worry, apprehension, or restlessness, ranging from excessive concern about the present or future to feelings of panic. Basis for rating: Verbal report during the course of interview and corresponding physical manifestations.

G3 Guilt feelings [_] 31
Sense of remorse or self-blame for real or imagined misdeeds in the past. Basis for rating: Verbal report of guilt feelings during the course of interview and the influence on attitudes and thoughts.

G4 Tension [_] 32
Overt physical manifestations of fear, anxiety, and agitation, such as stiffness, tremor, profuse sweating, and restlessness. Basis for rating: Verbal report attesting to anxiety and, thereupon, the severity of physical manifestations of tension observed during the interview.

G5 Mannerisms and posturing [_] 33
Unnatural movements or posture as characterized by an awkward, stilted, disorganized, or bizarre appearance. Basis for rating: Observation of physical manifestations during the course of interview as well as reports from primary care workers or family.

G6 Depression [_] 34
Feelings of sadness, discouragement, helplessness, and pessimism. Basis for rating: Verbal report of depressed mood during the course of interview and its observed influence on attitude and behavior.

G7 Motor retardation [_] 35
Reduction in motor activity as reflected in slowing or lessening of movements and speech, diminished responsiveness to stimuli, and reduced body tone. Basis for rating: manifestations during the course of interview as well as reports by primary care workers or family.

G8 Uncooperativeness [_] 36
Active refusal to comply with the will of significant others, including the interviewer, hospital staff, or family, which may be associated with distrust, defensiveness, stubbornness, negativism, rejection of authority, hostility, or belligerence. Basis for rating: Interpersonal behavior observed during the course of interview as well as reports by primary care workers or family.

G9 Unusual thought content [_] 37
Thinking characterized by strange, fantastic, or bizarre ideas, ranging from those which are remote or atypical to those which are distorted, illogical, and patently absurd. Basis for rating: Thought content expressed during the course of interview.

G10 Disorientation [_] 38
Lack of awareness of one's relationship to the milieu, including persons, place, and time, which may be due to confusion or withdrawal. Basis for rating: Responses to interview questions on orientation.

G11 Poor attention [_] 39
Failure in focused alertness manifested by poor concentration, distractibility from internal and external stimuli, and difficulty in harnessing, sustaining, or shifting focus to new stimuli. Basis for rating: Manifestations during the course of interview.

G12 Lack of judgment and insight [_] 40
Impaired awareness or understanding of one's own psychiatric condition and life situation. This is evidenced by failure to recognize past or present psychiatric illness or symptoms, denial of need for psychiatric hospitalization or treatment, decisions characterized by poor anticipation of consequences, and unrealistic short-term and long-range planning. Basis for rating: Thought content expressed during the interview.

G13 Disturbance of volition [_] 41
Disturbance in the willful initiation, sustenance, and control of one's thoughts, behavior, movements, and speech. Basis for rating: thought content and behavior manifested in the course of interview.

G14 Poor impulse control [_] 42
Disordered regulation and control of action on inner urges, resulting in sudden, unmodulated, arbitrary, or misdirected discharge of tension and emotions without concern about consequences. Basis for rating: Behavior during the course of interview and reported by primary care workers or family.

G15 Preoccupation [_] 43
Absorption with internally generated thoughts and feelings and with autistic experiences to the detriment of reality orientation and adaptive behavior. Basis for rating: Interpersonal behavior observed during the course of interview.

G16 Active social avoidance [_] 44
Diminished social involvement associated with unwarranted fear, hostility, or distrust. Basis for rating: Reports of social functioning by primary care workers or family.

Please read each question, assess your feelings, and circle the number on the scale for each question that gives the best answer for you.

		Very poor	Poor	Neither poor nor good	Good	Very good
1(G1)	How would you rate your quality of life?	1	2	3	4	5

		Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
2 (G4)	How satisfied are you with your health?	1	2	3	4	5

The following questions ask about **how much** you have experienced certain things in the last two weeks.

		Not at all	A little	A moderate amount	Very much	An extreme amount
3 (F1.4)	To what extent do you feel that physical pain prevents you from doing what you need to do?	1	2	3	4	5
4(F11.3)	How much do you need any medical treatment to function in your daily life?	1	2	3	4	5
5(F4.1)	How much do you enjoy life?	1	2	3	4	5
6(F24.2)	To what extent do you feel your life to be meaningful?	1	2	3	4	5

		Not at all	A little	A moderate amount	Very much	Extremely
7(F5.3)	How well are you able to concentrate?	1	2	3	4	5
8 (F16.1)	How safe do you feel in your daily life?	1	2	3	4	5
9 (F22.1)	How healthy is your physical environment?	1	2	3	4	5

The following questions ask about **how completely** you experience or were able to do certain things in the last two weeks.

		Not at all	A little	Moderately	Mostly	Completely
10 (F2.1)	Do you have enough energy for everyday life?	1	2	3	4	5
11 (F7.1)	Are you able to accept your bodily appearance?	1	2	3	4	5
12 (F18.1)	Have you enough money to meet your needs?	1	2	3	4	5
13 (F20.1)	How available to you is the information that you need in your day-to-day life?	1	2	3	4	5
14 (F21.1)	To what extent do you have the opportunity for leisure activities?	1	2	3	4	5

		Very poor	Poor	Neither	Good	Very good

				poor nor good		
15 (F9.1)	How well are you able to get around?	1	2	3	4	5

The following questions ask you to say how **good or satisfied** you have felt about various aspects of your life over the last two weeks.

		Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
16 (F3.3)	How satisfied are you with your sleep?	1	2	3	4	5
17 (F10.3)	How satisfied are you with your ability to perform your daily living activities?	1	2	3	4	5
18(F12.4)	How satisfied are you with your capacity for work?	1	2	3	4	5
19 (F6.3)	How satisfied are you with yourself?	1	2	3	4	5
20(F13.3)	How satisfied are you with your personal relationships?	1	2	3	4	5
21(F15.3)	How satisfied are you with your sex life?	1	2	3	4	5
22(F14.4)	How satisfied are you with the support you get from your friends?	1	2	3	4	5
23(F17.3)	How satisfied are you with the conditions of your living place?	1	2	3	4	5
24(F19.3)	How satisfied are you with your access to health services?	1	2	3	4	5
25(F23.3)	How satisfied are you with your transport?	1	2	3	4	5

The following question refers to **how often** you have felt or experienced certain things in the last two weeks.

		Never	Seldom	Quite often	Very often	Always
26 (F8.1)	How often do you have negative feelings such as blue mood, despair, anxiety, depression?	1	2	3	4	5

Did someone help you to fill out this form?.....

How long did it take to fill this form out?.....

Do you have any comments about the assessment?

.....

.....

THANK YOU FOR YOUR HELP

PERSONAL AND SOCIAL PERFORMANCE SCALE

100-91	Excellent functioning in all four main areas. He/she is held in high consideration for his/her good qualities. Copes adequately with life problems, is involved with a wide range of interests and activities
90-81	Good functioning in all four main areas, presence of only common problems and difficulties
80-71	Mild difficulties in one or more of the areas a-c
70-61	Manifest (moderate), but not marked difficulties in one or more areas a-c or mild difficulties in d. For area a, include sheltered work, if the performance is good
60-51	Marked difficulties in only one area a-c or manifest difficulties in d
50-41	Marked difficulties in two or three of the areas a-c, or severe difficulties in only one area a-c Without marked difficulties in the other two; no marked difficulties in d
40-31	Severe difficulties only in one area a-c and marked difficulties in at least one of the other two; or marked difficulties in d
30-21	Severe difficulties in two areas a-c; or severe difficulties in d, even if severe and marked difficulties in the areas a-c are absent
20-11	Severe difficulties in all areas a-c; or very severe difficulties in d, even if severe difficulties in area a-c are absent. If the person reacts to external prompts, the suggested scores are 20-16; if not, they are 15-11
10-1	Lack of autonomy in basic functioning with extreme behaviors but without survival risk (scores 6-10) or with survival risk, e.g.-death risk due to malnutrition, dehydration, infections, inability to recognize situations of marked danger (scores 5-1)

SCORING OF PSP

	Absent	Mild	Moderate	Marked	Severe	Very Severe
Self Care						
Socially useful activities						
Personal and social relationship						
Disturbing and aggressive Behavior						

Global Assessment of Functioning (GAF) Scale

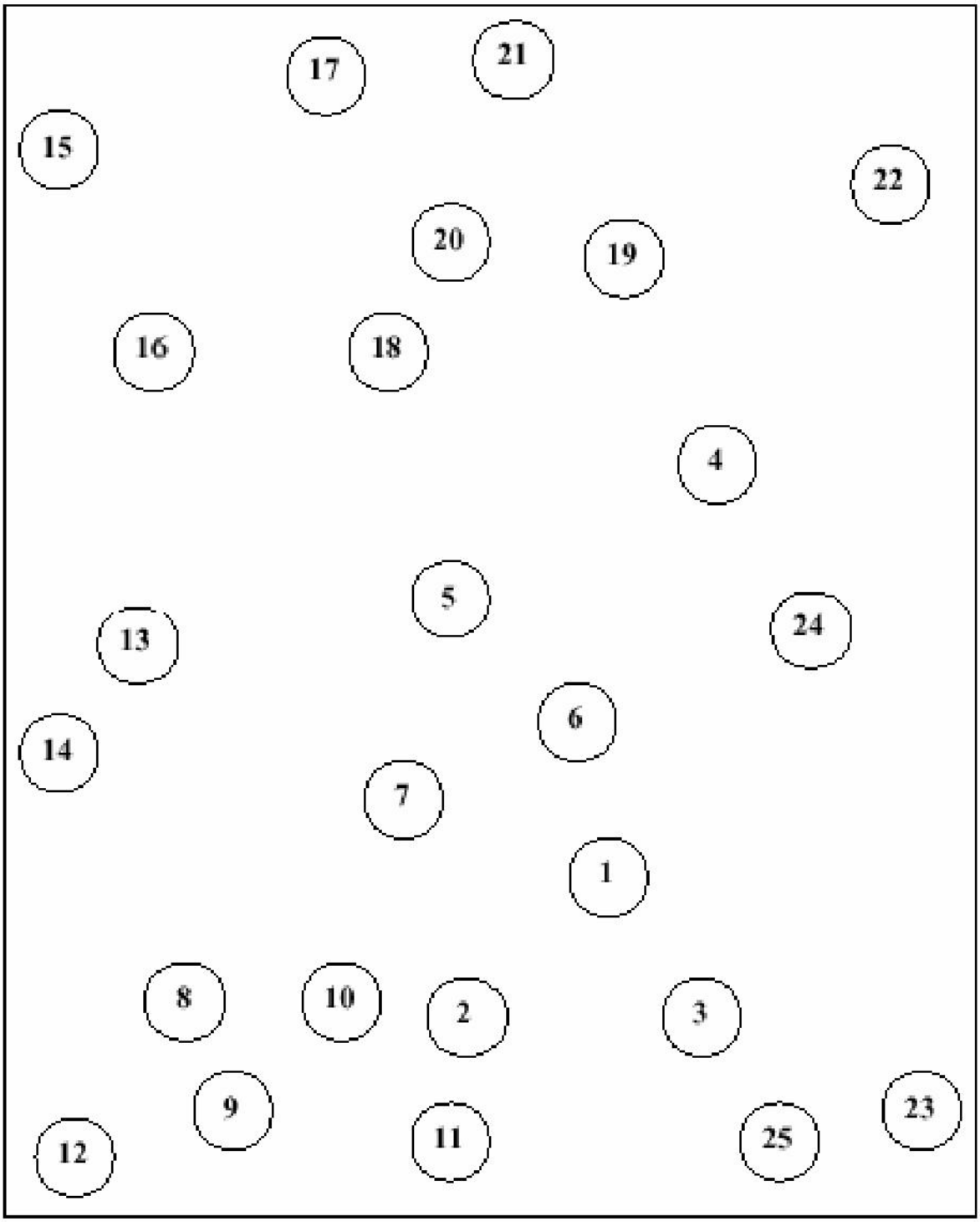
(From DSM-IV-TR, p. 34.)

Consider psychological, social, and occupational functioning on a hypothetical continuum of mental health-illness. Do not include impairment in functioning due to physical (or environmental) limitations.

Code	(Note: Use intermediate codes when appropriate, e.g., 45, 68, 72.)
100 | 91	**Superior functioning in a wide range of activities, life's problems never seem to get out of hand, is sought out by others because of his or her many positive qualities. No symptoms.**
90 | 81	**Absent or minimal symptoms** (e.g., mild anxiety before an exam**), good functioning in all areas, interested and involved in a wide range of activities. socially effective, generally satisfied with life, no more than everyday problems or concerns** (e.g. an occasional argument with family members).
80 | 71	**If symptoms are present, they are transient and expectable reactions to psychosocial stressors** (e.g., difficulty concentrating after family argument); **no more than slight impairment in social, occupational or school functioning** (e.g., temporarily failing behind in schoolwork).
70 | 61	**Some mild symptoms** (e.g. depressed mood and mild insomnia) **OR some difficulty in social, occupational, or school functioning** (e.g., occasional truancy, or theft within the household)**, but generally functioning pretty well, has some meaningful interpersonal relationships.**
60 | 51	**Moderate symptoms** (e.g., flat affect and circumstantial speech, occasional panic attacks) **OR moderate difficulty in social, occupational, or school functioning** (e.g.. few friends, conflicts with peers or co-workers).
50 | 41	**Serious symptoms** (e.g.. suicidal ideation, severe obsessional rituals, frequent shoplifting) **OR any serious impairment in social, occupational, or school functioning** (e.g., no friends, unable to keep a job).
40 | 31	**Some impairment in reality testing or communication** (e.g., speech is at times illogical, obscure, or irrelevant) **OR major impairment in several areas, such as work or school, family relations, judgment, thinking, or mood** (e.g., depressed man avoids friends, neglects family, and is unable to work; child frequently beats up younger children, is defiant at home, and is failing at school).
30 | 21	**Behavior is considerably influenced by delusions or hallucinations** **OR serious impairment in communication or judgment** (e.g., sometimes incoherent, acts grossly inappropriately, suicidal preoccupation) **OR inability to function in almost all areas** (e.g., stays in bed all day; no job, home, or friends).
20 | 11	**Some danger of hurting self or others** (e.g., suicide attempts without clear expectation of death; frequently violent; manic excitement) **OR occasionally fails to maintain minimal personal hygiene** (e.g., smears feces) **OR gross impairment in communication** (e.g., largely incoherent or mute).
10 | 1	**Persistent danger of severely hurting self or others** (e.g., recurrent violence) **OR persistent inability to maintain minimal personal hygiene** **OR serious suicidal act with clear expectation of death.**
0	Inadequate information.

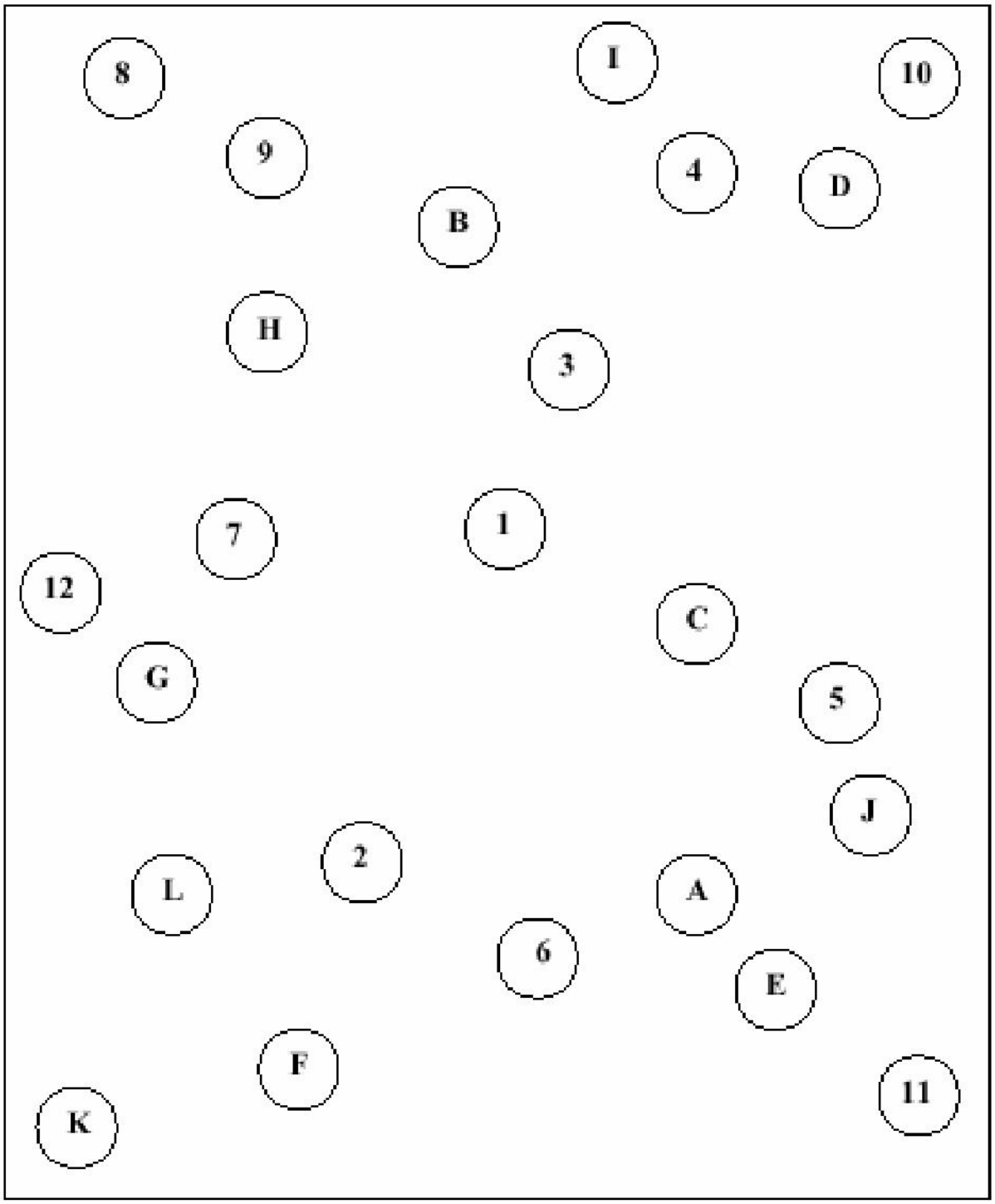
Trail Making Test Part A

Patient's Name: _____ Date: _____



Trail Making Test Part B

Patient's Name: _____ Date: _____



Red Blue Green Black Green Red Blue Red Green Black Red

Black Blue Green Black Red Blue Black Green Red Blue Black

Green Red Blue Black Green Red Green Blue Blue Green Red

Blue Black Red Blue Blue Red Black Red Green Blue Black

Black Blue Black Red Green Black Blue Red Blue Green Blue

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Green Black Blue Red Black Red Green Black Green Blue Black

Blue Blue Green Blue Blue Black Blue Red Black Green Red

Black Red Blue Green Red Black Red Black Black Blue Green

Blue Black Red Blue Green Black Green Blue Green Red Black

Green Blue Black Blue Red Black Green Black Green Blue Red

சிவப்பு நீலம் பச்சை கருப்பு பச்சை நீலம் சிவப்பு பச்சை கருப்பு பச்சை சிவப்பு

பச்சை கருப்பு நீலம் கருப்பு நீலம் சிவப்பு பச்சை நீலம் கருப்பு பச்சை கருப்பு

நீலம் சிவப்பு கருப்பு சிவப்பு பச்சை கருப்பு பச்சை சிவப்பு நீலம் சிவப்பு நீலம்

பச்சை சிவப்பு கருப்பு பச்சை கருப்பு பச்சை நீலம் பச்சை கருப்பு பச்சை கருப்பு

நீலம் பச்சை நீலம் கருப்பு சிவப்பு கருப்பு பச்சை நீலம் பச்சை சிவப்பு கருப்பு

நீலம் சிவப்பு கருப்பு பச்சை நீலம் கருப்பு நீலம் கருப்பு பச்சை கருப்பு நீலம்

பச்சை சிவப்பு நீலம் பச்சை கருப்பு நீலம் சிவப்பு பச்சை சிவப்பு பச்சை நீலம்

கருப்பு பச்சை கருப்பு சிவப்பு நீலம் பச்சை கருப்பு நீலம் கருப்பு நீலம் பச்சை

நீலம் கருப்பு நீலம் கருப்பு நீலம் கருப்பு சிவப்பு கருப்பு நீலம் கருப்பு சிவப்பு

கருப்பு நீலம் கருப்பு பச்சை நீலம் பச்சை கருப்பு சிவப்பு பச்சை நீலம் பச்சை

நீலம் பச்சை கருப்பு நீலம் சிவப்பு பச்சை கருப்பு நீலம் கருப்பு பச்சை நீலம்

நீலம் சிவப்பு நீலம் கருப்பு நீலம் சிவப்பு கருப்பு பச்சை நீலம் சிவப்பு பச்சை

சிவப்பு பச்சை கருப்பு சிவப்பு பச்சை கருப்பு நீலம் சிவப்பு கருப்பு பச்சை நீலம்

பச்சை நீலம் கருப்பு நீலம் பச்சை சிவப்பு கருப்பு பச்சை நீலம் கருப்பு சிவப்பு

பச்சை சிவப்பு சிவப்பு பச்சை நீலம் கருப்பு பச்சை நீலம் கருப்பு பச்சை நீலம்

சிவப்பு கருப்பு நீலம் கருப்பு சிவப்பு கருப்பு நீலம் சிவப்பு பச்சை கருப்பு சிவப்பு

VERBAL WORKING MEMORY

1. Back		
1	Ka	
2	Sa	
3	Sa	
4	Ta	
5	Tha	
6	Tha	
7	Pa	
8	Ra	
9	Ya	
10	La	
11	Sa	
12	Ta	
13	Ka	
14	Ka	
15	La	
16	La	
17	Tha	
18	Ya	
19	Ya	
20	Pa	
21	Ra	
22	Ra	
23	La	
24	Ka	
25	Ta	
26	Sa	
27	Sa	
28	Ka	
29	Ya	
30	Ya	

2. Back		
1	Sa	
2	Pa	
3	Ra	
4	Ta	
5	Tha	
6	La	
7	Tha	
8	Ka	
9	Pa	
10	Ta	
11	Pa	
12	Sa	
13	Ya	
14	Ra	
15	Ya	
16	Tha	
17	Pa	
18	Tha	
19	Ka	
20	Ya	
21	Ka	
22	La	
23	Ka	
24	Tha	
25	Ta	
26	Pa	
27	Ta	
28	Ka	
29	Ra	
30	La	

	H	O	C	ERROR (0+C)
1 BACK				
2 BACK				

AUDITORY - VERBAL LEARNING TEST

Date:

English Version

S. No	List A		Trail 1	Trail 2	Trail 3	Trail 4	Trial 5	List B		IR-A	DR-A	Recognition
1	Nose	மூக்கு						Shoes	செருப்பு			Hits
2	Cat	பூனை						Monkey	குதிரை			Mirror
3	Axe	கோடாரி						Bowl	கிண்ணம்			Hammer
4	Bed	படுக்கை						Cow	மாடு			Knife
5	Plane	பிளேன்						Finger	விரல்			Candle
6	Ear	காது						Dress	ஆடை,சட்டை			Motorcycle
7	Dog	நாய்						Spider	சிலந்தி			Axe
8	Hammer	சுத்தி						Cup	டம்ளர்			Clock
9	Chair	நாற்காலி						Bee	தேனீ			Chair
10	Car	கார்						Foot	பாதம்			Plane
11	Eye	கண்						Hat	தொப்பி			Turtle
12	Horse	குதிரை						Butterfly	வண்ணத்துப் பூச்சி			Leg
13	Knife	கத்தி						Plate	தட்டு			Dog
14	Clock	கடிகாரம்						Mouse	எஜீ			Table
15	Bike	வண்டி,பைஞி						Hand	கை			Cat
												Lips
												Tree
												Arm
												Nose
												Sun
												Truck
												Eye
												Fish
												Ear
												Horse
												Bike
												Stool
												Bus
												Bed
												Car

Trial 1	Trial 2	Trial 3	Trial 4	Trial 5	List B	IR A	DR	Recognition	
								Hits	
								Omission	
								Commission	

DIGIT SYMBOL SUBSTITUTION TEST

1	2	3	4	5	6	7	8	9
−	⊥	⊺	∟	∪	0		×	=

2	1	3	7	2	4	8	1	5	6	2	1	3	2	1	4	2	3	5	2	3	1	4	6	2

1	5	4	2	7	6	3	5	7	2	8	5	4	6	3	7	2	8	1	9	5	8	4	7	3

6	2	5	1	9	2	8	3	7	4	6	5	9	4	8	3	7	2	6	1	5	4	6	3	7

9	2	8	1	7	9	4	6	8	5	9	7	1	8	5	2	9	4	8	6	3	7	9	8	6

INSTITUTIONAL ETHICS COMMITTEE
MADRAS MEDICAL COLLEGE, CHENNAI -3

Telephone No : 044 25305301
Fax : 044 25363970

CERTIFICATE OF APPROVAL

To
Dr. Selvaraj. M
PG in MD Psychiatric Medicine
Madras Medical College, Chennai -3

Dear Dr. Selvaraj. M

The Institutional Ethics committee of Madras Medical College, reviewed and discussed your application for approval of the proposal entitled "Symptomatic remission in Schizophrenia and its relationship with functional outcome measures in Indian Population" No.02082012.

The following members of Ethics Committee were present in the meeting held on 10.08.2012 conducted at Madras Medical College, Chennai -3.

1. Dr. S.K. Rajan. M.D.,FRCP.,DSc	-- Chairperson
2. Prof. Pregna B. Dolia MD Vice Principal, Madras Medical College, Chennai -3 Director , Institute of Biochemistry, MMC, Ch-3	-- Member Secretary
3. Prof. B. Vasanthi MD Prof of Pharmacology ,MMC, Ch-3	-- Member
4. Prof. C. Rajendiran, MD Director , Inst. Of Internal Medicine, MMC, Ch-3	-- Member
5. Prof. S. Deivanayagam MS Prof of Surgery, MMC, Ch-3	-- Member
6. Thiru. S. Govindsamy. BABL	-- Lawyer
7. Tmt. Arnold Soulina MA MSW	-- Social Scientist

We approve the proposal to be conducted in its presented form.

Sd/ Chairman & Other Members

The Institutional Ethics Committee expects to be informed about the progress of the study, and SAE occurring in the course of the study, any changes in the protocol and patients information / informed consent and asks to be provided a copy of the final report.

Member Secretary, Ethics Committee

ஆராய்ச்சி ஒப்புதல் கடிதம்

ஆராய்ச்சி தலைப்பு :

பெயர் : தேதி :

வயது : உள் நோயாளி எண் :

பால் : ஆராய்ச்சி சேர்க்கை என் :

இந்த ஆராய்ச்சியின் விவரங்களும் அதன் நோக்கங்களும் முழுமையாக எனக்கு தெளிவாக விளக்கப்பட்டது.

எனக்கு விளக்கப்பட்ட விஷயங்களை நான் புரிந்துகொண்டு நான் எனத சம்மதத்தைத் தெரிவிக்கிறேன்.

இந்த ஆராய்ச்சியில் பிறரின் நிர்ப்பந்தமின்றி என் சொந்த விருப்பத்தின் பேரில் தான் பங்கு பெறுகிறேன் மற்றும் நான் இந்த ஆராய்ச்சியிலிருந்து எந்நேரமும் பின்வாங்கலாம் என்பதையும் அதனால் எந்த பாதிப்பும் ஏற்படாது என்பதையும் நான் புரிந்துகொண்டேன்.

இந்த ஆராய்ச்சியின் விவரங்களைக் கொண்ட மருத்துவ ஆராய்ச்சியில் என்னை சேர்த்துக் கொள்ள சம்மதிக்கிறேன்.

நான் என்னுடைய சுயநினைவுடன் மற்றும் முழு சுதந்திரத்துடன் இந்த மருத்துவ ஆராய்ச்சியில் என்னை சேர்த்துக்கொள்ள சம்மதிக்கிறேன்.

கையொப்பம்

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Dissertation submitted to the

TAMIL NADU DR. M. G. R. MEDICAL UNIVERSITY

in parial fulfillment of the requirements for

M.D (PSYCHIATRY)

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